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ON

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HEARINGS

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ROYAL COMMISSION
ON
ENERGY

Hearings held at Calgary, commencing Monday, February 3, 1958, at 10.00 A.M.

PRESENT:

Mr. H. Borden, C.M.G., Q.C.	-	Chairman
Mr. J.L. Levesque,	-	Member
Mr. G.E. Britnell,	-	Member
Mr. G.G. Cushing,	-	Member
Dr. R.D. Howland,	-	Member
Mr. L.J. Ladner, Q.C.	-	Member
Dr. R.M. Hardy,	-	Member

COMMISSION COUNSEL:

Mr. A.S. Pattillo, Q.C.

Mr. Miles H. Patterson.

Mr. J.F. Parkinson	--	Secretary to the Commission.
Major N. Lafrance	--	Assistant Secretary to the Commission.

APPEARANCES:

Representing The British American Oil Co. Ltd.:

Mr. W.R. Sinclair	-	Counsel
Mr. Edward D. Loughney	-	Senior Vice-President
Mr. Floyd D. Aaring	-	Zone Production Manager
Mr. James A. Strand	-	Petroleum Engineering Supervisor
Mr. Sydney J. Anderson	-	Production Engineering Advisor
Mr. Richard E. Martin	-	Reservoir Engineer
Mr. Stanley G. Pearson	-	Manager, Exploration Department.
Mr. John S. Wonfor	-	Chief Sub-surface Geologist
Mr. Nicholas M. Ediger	-	Senior Staff Geologist
Mr. John R. Yarnell	-	Manager, Services Department
Mr. E. Eric Hargreaves	-	Supervisor, Budget and Statistics.

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APPEARANCES:

Representing Northern Natural Gas Company.

Mr. E.J. Chambers, Q.C.	-	Counsel
Mr. John F. Merriam	-	President
Mr. W.A. Strauss	-	Administrative Vice-President
Mr. F.L. Gagne	-	Market Analyst
Mr. J.M. Barton	-	Vice-President of Northern Natural Gas Producing Company.
Mr. Dale TeKolste	-	Legal Department, Omaha.

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APPEARANCES:

Representing a group of independent producers:

Mr. Vernon Van Sant, Jr.	-	Executive Vice-President, Amurex Oil Company.
Mr. A.G. Bailey	-	Vice-President & General Manager, Bailey Selburn Oil & Gas Ltd.
Mr. W.H. Hohag, Jr.	-	President & General Manager, Banff Oil Ltd.
Mr. A.F. Beck	-	President, Canadian Export Gas Ltd.
Mr. W.E. Powell	-	Vice-President Exploration and Production, Canadian Husky Oil Ltd.
Mr. A.E. Feldmeyer	-	President, Canadian Superior Oil of California, Ltd.
Mr. N.W. Nichols	-	Executive Vice-President, Great Plains Development Company of Canada Ltd.
Mr. E.A. Galvin	-	General Manager, Medallion Petroleums Limited

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Thursday,
February 27, 1958

---On resuming at 9.45 a.m.

---Mr. Commissioner Levesque in the chair.

---The Chairman and Mr. Commissioner Cushing not present.

THE CHAIRMAN: Gentlemen, we will now resume our hearings and continue on from where we left off yesterday. Mr. Pattillo?

BY MR. PATTILLO:

Q. Mr. Loughney, in connection with Table 2 in your exhibit, are these figures shown in the right hand column just volumetric calculations based on the figures shown in the left hand column or are there adjustments made, for instance, in the Yukon and Northwest Territories and in Manitoba and Saskatchewan based on your company's own peculiar knowledge of the situation?

MR. LOUGHNEY: I would like to direct that question to Mr. Pearson.

MR. PEARSON: That is correct, sir.

Q. Now, would you develop that a little further for us?

MR. PEARSON: In arriving at the total of 150 trillion we used the factor judgment to arrive at what the volume of -- the number of cubic feet of gas per cubic mile of sediments in Canada, comparing it to the figure for the United States.

Q. A little louder, please.

MR. PEARSON: In arriving at the 150 trillion we used our judgment as to what each area would be capable of producing at that point, the number of cubic feet per mile of gas using as our yardstick the volume per cubic mile in the mid-continent region and we used our judgment as to the proportions that each area would bear, Saskatchewan and Manitoba, the Alberta Plains, the Alberta Foothills, Northeast British Columbia and the Yukon and Northwest Territories. We weighted these areas as to our best geological judgment.

Q. And has your company done work in all of these five territories?

MR. PEARSON: We have done work in all areas, sir, that are listed here, geological and geophysical work in all cases, a certain amount of ---

Q. Now, I am asking Mr. Loughney to look at page 11 of the brief, and Exhibit 5. You say in the second paragraph after referring to Exhibit 5:

"The total expenditures by the industry "in oil and gas properties during this period

[illegible]

"have been $3.2 billion, of which only $1.9 "billion has been recovered to date, so that "expenditures to date have exceeded income by "$1.3 billion."

How would that experience compare, from your knowledge of the oil and gas business in this continent, with a similar period in the history of the business in the United States?

MR. LOUGHNEY: Well, there are probably some areas in the United States that would have an experience similar to this. I am thinking now of the Gulf Coast area as of today. I think if you go back beyond the Gulf Coast area you will find that the pay-out period was shorter than it would appear to be in Canada.

Q. You used the expression "pay-out period", what do you estimate from your experience is the pay-out period in Canada?

MR. LOUGHNEY: Well, it is very difficult to say at this point. We feel that the cost is an important consideration to the pay-out and, of course, that depends on whether we get the markets and the situation as of today, as far as crude oil is concerned, is very uncertain.

Q. Let me put it this way then: from your experience in the business what is the pay-out period that a producer requires in order to have an economically sound operation?

MR. LOUGHNEY: From three to five years on drilling of a well.

Q. That is the original capital cost should be recovered within three to five years to give the producer the circulating capital that he needs?

MR. LOUGHNEY: That is correct.

Q. And in this industry circulating capital is a most essential part of it?

MR. LOUGHNEY: Yes, it is.

Q. Now, in the next paragraph you make the statement:

"In 1957, the industry expended in "exploration, development and producing opera- "tions $547 million, and received, after royalty, "income of $400 million, or $147 million less "than the amount expended during the year. An "excess of expenditure over income has occurred "annually since 1947 and has necessitated the "attraction of additional new capital each year."

Now, are we comparing likes with likes when you have those figures there? In other words, are you talking about capital expenditure and an income receipt?

MR. LOUGHNEY: Yes, sir, we are.

Q. Well, will you explain to me and the Commission why you make that comparison? Normally you would compare capital expenditures with

capital receipts and income expenditures with income receipts. Now why do you make this comparison in the industry that you have made here?

MR. LOUGHNEY: Well, our own receipts are receipts from the sale of the products, crude oil or gas, that is the cource of income.

Q. Yes, but what I was thinking of, the $547 million expenditures is in part an income expenditure and in part a capital expenditure. In other words, as a result of that expenditure you earn income and you also have, in fact, your capital holdings.

MR. LOUGHNEY: Well, the purpose of that statement is to demonstrate the need that operating as we do and expending more money, whether it be in capital or expenditures, our income is not sufficient to generate the capital that is necessary to keep the programme going which means additional new capital must come into the industry each year.

Q. And that, I suppose, makes it more difficult for the small independent producer than the large producer such as Imperial or British American or Shell?

MR. LOUGHNEY: I think that is correct. It is very difficult to raise risk capital in this type of industry.

Q. Now, on page 12 you say:

"It is inevitable that if present "available export markets are denied, a re- "appraisal of the industry's over-all explora- "tion program must follow. The probable "result will be some deferment of planned pro- "jects, together with a shifting of emphasis "in exploration activity away from areas where "gas is likely to be encountered. This could "cause serious dislocation in the development "of both oil and gas reserves, adversely "affecting not only the petroleum industry "but the over-all economy as well."

Now, would you please enlarge upon that statement?

MR. LOUGHNEY: Yes, sir. What we have in mind by that statement is this -- I will use our own company's experience if I may?

Q. Right.

MR. LOUGHNEY: We are conducting, together with our partners, large exploration programs primarily in the Foothills belt where we have found a number of gas discoveries. We have continued this program feeling that if larger markets are to be attracted we must establish reserves and we have gone forward with this in the expectation that those markets would develop. Our statement is directed at the situation where export markets are denied and the assumption that the export

markets will be denied and we could no longer justify to our management the millions of dollars which we have been putting into that type of program where we are unable to show any period at which we can get return for our investment. This means we would shift the emphasis away from that type of exploration program and defer as much as possible spending any money in those areas.

Q. Now, can we canvass for a few moments your ideas as to what is needed for the producing in Alberta in the way of markets and may I make these statements to start the discussion:

The cities of Edmonton and Calgary have come before this Commission and have expressed the view that as people living in the Province of Alberta, the consumers here should continue to obtain this gas at prices comparable to those being paid today and the cost of acquisition of the gas that he requires should not be brought into line with the demand from the outside market. In other words, because the State of California wants gas and has a big demand for it and is prepared to pay a price higher than the City of Calgary or the City of Edmonton have been paying in the past should in no way affect what the City of Edmonton or Calgary will pay in the future, a two-price principle. Trans-Canada have come before us and have said "We have markets much larger than

we anticipated, we are going to require substantial increases in volume. We have increased our prices for gas in 1957 and again the first of this year but we have been unsuccessful in buying gas".

Now, with that background would you develop your thought as a producer as to how you think the objective you express in your brief, namely increased export markets and at the same time consideration for the Canadian consumer, how it can be developed?

B

MR. LOUGHNEY: By the Canadian consumer, are you referring to Canada as a whole?

Q. Yes, I am referring to Canada as a whole.

MR. LOUGHNEY: Well, I do not believe that export alone will be responsible entirely for the increase in the value of gas or the price paid for gas. The situation that we have had in Alberta and Western Canada has been one of the producer primarily dealing with one pipeline, so long as long line carriers are concerned. We felt that the competition of other carriers would be rather wholesome to the industry. We felt it would give a producer an opportunity to negotiate for what he considered a better contract than he had been getting. The price of gas that any purchaser would pay will seek the level at which he can sell that gas in whatever markets he deals in competition with other fuels, although there is a limit to what he can pay. There has been some psychological reaction among producers to deal with any purchaser on gas to be delivered at an if-as-and-when basis, because that is what we have been puttin up with for the last 7 or 8 years. When we negotiated a contract, we never knew whether we would sell a foot of gas under it because there were so many approvals to be obtained before the line was actually built. That situation, in my judgment, will strike itself out when we get more gas moving

out of the Province.

I do not anticipate that Trans-Canada will have any more of a problem buying gas than any other pipeline once it is in business buying gas and can offer the producer a normal type of contract when he says, "You have the gas and I need it; you get your volume up to this point and we will take it."

Q. You do not think there is any practical problem confronting the Canadian consumer so far as getting gas is concerned in competition with California from the States or Washington or Oregon?

MR. LOUGHNEY: I think the best protection, probably, is the incentive to the producer to keep exploring and developing reserves because when there is plenty of gas available for the markets ahead of us, that, in itself, will have a tendency to keep prices down. In other words, it does not create the scarcity angle where one is played against the other.

Q. On page 13 of your brief, in the first paragraph you say: "Heretofore in determining volumes of gas surplus to requirements, it has been the practice to relate future needs for an extended period to proven reserves as at a particular time. In our opinion this approach is an erroneous one, which if continued will serve to delay unduly the disposition of gas reserves."

Can you tell us, Mr. Loughney, from your experience in the United States as a producer there,

[illegible]

whether the approach which you have set out in page 13 and which you consider to be an erroneous one is followed, as it has been in the Province of Alberta, or whether they have a different approach.

MR. LOUGHNEY: I am not familiar with that type of approach having been used any place except in the Province of Alberta.

Q. Would you develop that a little further? Is the approach that you are advocating here of looking at the cumulative results and the trends, is that the approach that is normally used, in your experience, elsewhere in the world?

MR. LOUGHNEY: Yes, I would say that it was.

Q. You do not think that there would be any risk of supplies not becoming available if the trend approach was adopted?

MR. LOUGHNEY: Well, there is protection against such risk; if it should ever materialize that there was any slackening off in the trend and it looked as though we were not going to reach the objective we sought, there should be a gradual slackening down in the allocation of reserves to pipelines exporting gas to the Provinces, say, or from Western Canada. I think there is a measure of protection in the period of time in which the market is built up and in which our reserve is built.

Q. Have you given any thought as to a formula that might be adopted by this Commission and recommended to the Government as to the quantities of gas that it would be conservatively safe to permit the export of in any year?

MR. LOUGHNEY: No, we have not given consideration to a formula.

Q. I wish you might have your people give some thought to that and, subsequently, make a recommendation in writing to the Commission.

MR. LOUGHNEY: We would be very glad to do that.

Q. I think I only have one further question, Mr. Loughney, and that arises out of, perhaps, a misunderstanding on my part when I was talking about what you consider was a sound payout.

Were you talking about a sound payout period simply on the cost of drilling the well, or were you including in there as part of the cost that must be recovered the preliminary cost of exploration, land acquisition, and everything like that?

MR. LOUGHNEY: I was referring only to the cost of the well.

Q. I did not understand that. Can you give me what, in your experience, is a period of time that is the maximum that is sound to recover not only the cost of the well, but the preliminary expenses as well?

MR. LOUGHNEY: Well, that would be a rather difficult question for me to answer for the reason we carry a substantial exploration program and have since about 1947, so that our exploration program is several years ahead of our drilling program. We have not considered it in that light.

MR. PATTILLO: Those are all the questions I have, Mr. Chairman.

THE ACTING CHAIRMAN: Mr. Frawley?

BY MR. FRAWLEY:

Q. Mr. Loughney, I would like to ask you a few questions about your gas export policy, but before doing so, I would like to get on the record a few general observations with regard to B.A. affairs in our present time in the United States.

Have you been, yourself, long with B.C., Mr. Loughney?

MR. LOUGHNEY: I have been with British American since July 1st, 1956.

Q. For many years, as you know, B.A. was interested in the development of oil and gas in Alberta to a greater or less extent.

MR. LOUGHNEY: Yes, sir.

Q. But it is a fact that since the association was made with the Gulf Oil Corporation, that interest has stepped up very considerably.

MR. LOUGHNEY: Yes, sir.

Q. And you came to the B.A. organization, did you, from Gulf?

MR. LOUGHNEY: I did.

Q. Were you with the Gulf Oil Corporation, the United States entity?

MR. LOUGHNEY: I was originally with Gulf in the United States, but I was placed in charge of Gulf operations known as Canadian Gulf Oil Company, in September, 1951, and was vice-president and general manager of that operation at the time Canadian Gulf was consolidated and merged into British American.

Q. And British American, unlike some other large Canadian oil companies, has a very active interest in the natural gas side of the industry?

MR. LOUGHNEY: That is true.

Q. You have talked about the necessity for an incentive and I take it from that, Mr. Loughney, that you regard the present situation as one which does not carry a very keen incentive for further development?

MR. LOUGHNEY: We feel that the reserves at the present time are increasing at a rate more rapid than we can see the demand will, based on present markets.

Q. And would you say that the industry has suffered from a lack of incentive to develop?

MR. LOUGHNEY: So far as gas is concerned, yes.

Q. I am speaking entirely of natural gas.

MR. LOUGHNEY: Yes.

Q. Would you say that the lack of incentive as to whether gas export is to be allowed as a policy has contributed to the absence of the incentive?

MR. LOUGHNEY: Yes, sir.

Q. Quite definitely?

MR. LOUGHNEY: Yes, sir.

Q. Would you say it has been a factor in slowing down development in the natural gas side of the industry?

MR. LOUGHNEY: Speaking of the natural gas side of the industry as a whole, very definitely.

Q. Now, I was quite interested in what

you said about the manner in which the granting or refusing of gas export permits until now has worked out, and I take it from what you say in your brief, looking particularly at page 16 and page 17, at the top of page 16, where you say:

"It is not realistic to ignore reserve "growth potential to meet long-term require- "ments and to appraise the adequacy of reserves "to meet these requirements solely on the basis "of proven reserves."

Is it fair to paraphrase that by saying that you mean that export permits should be granted by both Provincial and Federal authorities upon the strength not merely of present proved reserves but upon the strength of what you call, in one place, reserve growth potential and, in another place, the potential growth in reserves?

MR. LOUGHNEY: Well, I think you have to have part of each. You have to have enough proven reserves to justify an export in the first place and then, considering the growth of reserves, we feel that the growth of reserves is such, the trend of the growth, that there is every evidence that we will have adequate gas reserves to take care of long-term requirements.

Q. And you feel that the export permit granting authority should take into account the growth in the trend as well as what you might call

merely the visible proven reserves?

MR. LOUGHNEY: That is correct.

Q. And you feel that if that were not done, it might -- you would call that probably, not unfairly, a short-sighted policy, to take into account merely the proven visible reserves in the granting of export permits?

MR. LOUGHNEY: Well, under that policy I don't believe we would lose very much gas out of the province, as far as export is concerned.

Q. But you think if the permits were granted upon the strength of the growth potential, that gas would be developed, get into the pipe line and move into export?

MR. LOUGHNEY: That is the incentive we feel is needed.

Q. And that is what the industry needs?

MR. LOUGHNEY: That is correct.

Q. Now, I want to ask you something -- Mr. Pattillo touched on it, and that is the manner in which to meet the requirements of Alberta, and probably another way of putting that is to meet the requirements of the utilities.

Do you agree with the suggestion that the Crown reserves should be set aside to supply the needs, present and future, of the Alberta utilities, or Alberta citizens?

MR. LOUGHNEY: By "Crown reserves" do you

mean all Crown lands?

Q. I mean the lands that come back into the hands of the Crown and are now sold by public auction from time to time to the highest bidder.

Would you subscribe to a theory that would change that and dedicate --- I think that is a word sometimes used -- to the utilities those reserves, even though they had to be held in some kind of trusteeship, which, if I understood it, if I am not over-simplifying it, was the suggestion made here within the last three or four days?

MR. LOUGHNEY: I, frankly, have not heard of that theory. I don't believe I could subscribe to it. I can see some problems arising out of that.

Q. You did not hear the submission made by the City of Edmonton some three or four days ago?

MR. LOUGHNEY: No.

Q. Do you think that would contribute to or work against the incentive which you say should be there for the development of the natural gas reserves, thinking, at the moment, of natural gas reserves in this province?

MR. LOUGHNEY: Well, I would think it would work against them.

Q. In your own case, if you were not

able to go in and buy, using the word loosely, Crown reserves and develop them as you have developed them in the past, you would regard that as slowing down the development, wouldn't you?

MR. LOUGHNEY: That is correct.

Q. Turning to the other side, the utility side, what do you think about the suggestion that there should be a price differential, that the people of Edmonton should not be thrown into the open market, for instance, to compete against the people in San Francisco for the price of gas? Have you given any thought at all as to what might be worked out to satisfy, in whole or in part, that point of view?

MR. LOUGHNEY: Well, gas is no different from any other commodity and is affected by the inflationary forces; there is labour, there is material involved. I do not think it is practical to think that gas could always be produced at the same price. The cost of finding gas and developing gas reserves, the cost of operating gas wells and the cost of transmission lines are all affected by economics.

Q. Mr. Loughney, I must keep remembering, and I am sure you appreciate it, that I am really representing all the people in Alberta but, taking just the point of view of the citizens in the large centres, at the moment, it has been

said to me, "Of course, any increase in the price of gas which is due to a rise in the cost of materials and charges is acceptable; but when the price of gas itself is increased to us, it is that to which we object."

Now, can you develop it a little bit further, after I have made that suggestion to you?

MR. LOUGHNEY: Well, I think, generally, the people who make those statements are looking at the price of gas itself and not giving consideration to the fact that gas has been bought cheaply in comparison to the cost of producing gas, finding it and so forth, over the past few years, because we did lack markets.

Q. Well, that is another way of saying -- and I am exceedingly interested to have the view of a person as experienced as you are, representing such a large interest in the industry -- you are really saying that, in a sense, it has been a depressed price, the price of Alberta gas to the Alberta consumer?

MR. LOUGHNEY: It has been pretty much of a purchaser's market.

Q. And you say now we are passing into a -- you say it has been a seller's outlay, that the buyers of gas have controlled the price, the citizens?

MR. LOUGHNEY: Well, they are the purchasers

of gas, from my standpoint.

Q. Yes, because, you see, there are two points of view. You say we are now entering into another phase, where people are coming in to buy gas for export and the effect of their presence here, you say, necessarily is going to lift that basic price?

MR. LOUGHNEY: I don't say may necessarily lift it. There may be some compensating factors which come along with it that may be helpful in supplying gas to cities and municipalities.

Q. Do you think, in the long run, it is not going to materially increase the local price, or is it going to increase the local price?

MR. LOUGHNEY: I don't feel it will increase the price above the value of the gas, as far as the consumer is concerned. In other words, it is not to place a penalty.

Q. Having in mind the value of the commodity that he is buying?

MR. LOUGHNEY: That is correct.

Q. I take it you do favour, or everything you have told me and everything you have said in your brief indicates, I think, that you favour the export of gas from Alberta?

MR. LOUGHNEY: Yes, that is a fair statement.

Q. Do you favour exports to any

particular area?

MR. LOUGHNEY: We don't have any particular area in mind, no. We would favour the export of gas where we can get good, sound markets.

Q. In other words, you are quite indifferent as to whether it goes to Eastern Canada or into the United States of America?

MR. LOUGHNEY: No, I think by -- there is no question but what the eastern Canadian market should be supplied before any export from Canada should be considered.

Q. Now, going to another phase, I would like to know, if you will tell me, how the sour gas, assuming, in the Foothills belt, you are going to encounter sour gas: how are you going to process the sour gas, by whom, at whose expense; is it going to be done field by field, and so on?

Would you please develop that for me, as to what your views are as to how you are going to turn the sour gas that you will find into the marketable gas that has to be put through the pipe lines?

MR. LOUGHNEY: Well, that is a producers' problem, primarily. The producer explores wildcats and develops, and, if the result of his efforts is a sour gas field, then the next step, after having secured his markets, is to either build a plant himself or arrange to have someone else build

it for him. I mean, by that, that there are people who are interested in building plants, who might not be interested in the exploration and development end of the business.

In our particular case we have constructed the plants in the fields where we have developed markets.

Q. Now, Mr. Loughney, that is what I would like to develop with you. I asked that question of each of the three transmission companies that have been before the Commission, Westcoast and Trans-Canada and a would-be exporter and transmission company, the Alberta and Southern, and they all told me, "We will leave that to the producers."

Now, frankly, I regarded that as being a little too cavalier way to dispose of what strikes me as being a basic question.

You say, "That is not going to bother us. We will put up the plants to make our gas marketable."

That does not bother you?

MR. LOUGHNEY: Well, let's not say it doesn't bother us, because it does.

Q. The fact that a field of gas is going to be sour gas and present sulphur and LPG problems is not going to deter you at all in going to look for gas?

MR. LOUGHNEY: That is part of the business, the way we see it.

Q. Does the same thing apply to the smaller independent producers?

MR. LOUGHNEY: I think they pretty largely regard it the same as we do, whether an independent producer or a group of producers chose to build a plant themselves or have someone else build it for them, negotiating a deal to sell what we call raw or unprocessed gas and take some return from the sale of products from the plant operator. That is normal in our business.

Q. Now, Mr. Loughney, I don't know, but being somewhat theoretical perhaps one cannot pursue it too far at this stage, but it seemed to me that there would be small fields where putting a processing plant up would not be economical, certainly for a small operator. Would there not be such circumstances develop, probably?

MR. LOUGHNEY: Yes, there will be, but those plants are not economic for a small producer and I doubt if they would be economic for a large producer.

Q. You think that because gas might be found in the sour gas area that will not be developed because the processing costs will be a deterrent, without the further drilling?

MR. LOUGHNEY: That is true of any marginal production, and it is true of marginal oil production as well as marginal gas production.

Q. I was glad to hear you say yesterday that the excess of sulphur did not frighten British American.

MR. LOUGHNEY: Well, it don't make us sleep easier, either.

Q. But it is not going to be a deterrent to you looking for gas and getting it out of the ground even though it is going to have a lot of hydrogen sulphide in it?

MR. LOUGHNEY: It is one more of the many problems connected with this business.

Q. Now I am finished, Mr. Loughney, except for one thing: if I look through the table of members of the Alberta Trunk I find Canadian Gulf is a shareholder in Group 3, as a producer.

MR. LOUGHNEY: Yes, that is correct.

Q. Now, Canadian Gulf ---

MR. LOUGHNEY: That is in the process of being transferred to British American.

Q. Oh, well, that explains it. I was going to say: has Canadian Gulf, as such, any further function in the industry?

MR. LOUGHNEY: No, it has not.

Q. It is now going to be British American Oil?

MR. LOUGHNEY: That is correct. There is some little entanglement in the transfer of those shares. I am not familiar with it and

perhaps Mr. Sinclair should answer it.

MR. SINCLAIR: I think, to answer the question in detail and to make it logical, Mr. Loughney, would take quite an explanation. We are working on the problem now and we think it will be solved within the next few days.

MR. FRAWLEY: If you can solve the sulphur problem, you can solve that problem.

THE ACTING CHAIRMAN: Is that all, Mr. Frawley?

MR. FRAWLEY: Yes.

THE ACTING CHAIRMAN: Mr. Loughney, the Commissioners will have a few easy questions to ask you, very short. We will start with Dr. Britnell.

MR. COMMISSIONER BRITNELL: I am still a bit confused in the matter of reserves and their calculation. The very useful glossary of terms so kindly provided by Mr. Loughney deals with six aspects of the ways of looking at reserves, the producible reserves, the marketable reserves, the present reserves, the virgin reserves and the ultimate reserves. I should have said five rather than six aspects.

In previous submissions we have heard a great deal about recoverable reserves and deliverable reserves. Now, from these earlier submissions I understood that, even with the best conservation

methods applied to the production of gas and oil, a fairly substantial percentage of gas will still be left in the ground when the last possible or, perhaps I should say, deliverable thousand cubic feet of gas has been recovered. In fact, on the basis of present proved reserves it has been suggested that from 4 to 5 trillion cubic feet would not be recoverable or deliverable, and I wondered whether your figures, say, of the marketable reserves, take account of this factor.

MR. LOUGHNEY: I would like to ask our engineers to answer that question, please.

MR. STRAND: In computing our marketable reserve estimates in the brief, we have necessarily used a certain abandonment pressure. That is, for these large non-associated gas fields, the abandonment pressure may be 400 pounds. That is, under ordinary circumstances no more gas would be recovered after that abandonment pressure had been reached.

First of all, those marketable reserves we referred to are recoverable reserves to a given abandonment pressure. Later on down the line, if the price of gas is such that additional compressors can be economically added so that all the abandonment pressure can be reduced, then more gas will be recovered than what we have estimated.

However, the abandonment pressures that we

have used in computing our recovered reserves are what we consider to be realistic on today's standard.

MR. COMMISSIONER BRITNELL: Let me be quite sure about this. Under, for instance, your definition of marketable reserves, you say, "Marketable reserves represent producible reserves less plant and lease fuel requirements, line losses and reserves presently considered not readily accessible to markets."

As a matter of fact, in there you have taken into account, do I understand it, gas that will be left in the ground? It does not seem to take such account, from the wording.

MR. STRAND: I believe we took that into account in the first definition of producible reserves and producible reserves are recoverable reserves computed on the basis of certain abandonment pressures that I just mentioned.

If it would help to mention a rough figure, approximately 80 to 85 per cent of the total gas in place will ordinarily be recovered, and once we computed the producible reserves then we convert those to marketable reserves by making the deductions as indicated in our glossary there.

MR. COMMISSIONER BRITNELL: Thank you.

THE ACTING CHAIRMAN: Dr. Howland?

MR. COMMISSIONER HOWLAND: Mr. Loughney, I am interested in these remarks of yours about the

"Canada first" policy. If you translate that into a possible situation where the return to the producer on such a policy is less, would you still go along with the "Canada first" programme?

MR. LOUGHNEY: If I understand your question correctly, if the eastern Canadian market resulted in less net-back than an export market, would we still feel the same way about it?

MR. COMMISSIONER HOWLAND: Yes.

MR. LOUGHNEY: Yes, we would. We feel the gas resource belongs to Canada and the Canadian markets and, if it were a situation where an export market was outbidding the Canadian market, we would feel that in addition to the fact that the resource did belong to Canada there is also the measure of protection which we would like to consider at the same time in our investment by dealing in a Canadian market, and we would give full consideration to that and I am sure there would be no question but what we would deal in the Canadian market.

MR. COMMISSIONER HOWLAND: Do you feel this view would be shared by the gas producing companies here generally, or is this your particular interest?

MR. LOUGHNEY: Well, I can't speak for the other producers, but it would be hard for me to visualize that there would be a difference of

opinion.

We don't consider the Eastern Canadian market as not being feasible to Western Canadian gas. Maybe that would help answer the question.

MR. COMMISSIONER HOWLAND: If you could spend a moment, I would like you to develop a few of the economic facts involved here. The mileage to Montreal is fairly extensive, more, I believe, than to San Francisco. Have you any measurement of what this policy of "Canada first" is going to cost you?

MR. LOUGHNEY: I don't feel it is going to cost us anything.

MR. COMMISSIONER HOWLAND: Will you show me that it is not going to cost you something?

MR. LOUGHNEY: Well, the fact that the Trans-Canada table new estimated gross figures are all very substantial quantities just adds to the conviction that we have held from the start that the market potential was in Eastern Canada, and it was a matter of getting a good, sound project back-up and, as those markets grow, transmission costs will come down, and we consider that is a good market for our gas and could be just as good a market as we would get otherwise.

MR. COMMISSIONER HOWLAND: Well, I am not arguing against you. I want merely to understand this. If you took the same volume of

gas from Alberta to Montreal and Toronto and the same volume of gas to San Francisco, one market is closer than the other, is that right?

MR. LOUGHNEY: Yes, that is correct.

MR. COMMISSIONER HOWLAND: Well, is there a difference in cost?

MR. LOUGHNEY: Oh, strictly on transmission costs, it is -- it should result in a higher netback, yes.

MR. COMMISSIONER HOWLAND: But there are other factors, aren't there?

MR. LOUGHNEY: Yes, there are others.

MR. COMMISSIONER HOWLAND: Could you tell me what they are? I am interested, generally, in trying to figure out whether there is a cost to the producers involved in this policy or whether there isn't. I believe the price structure of the energy market in Central Canada is higher than the California market. I don't know.

MR. LOUGHNEY: I think that is correct. The competitive situation with gas and other types of fuel in Southern California would be different than in Eastern Canada.

From the figures that, again, were tabled by Trans-Canada, it would appear that they feel they can capture a large part of that market and the compensating factor, as between the two markets, is the fact that the Trans-Canada market gives

every evidence that it will build, and build rather rapidly, with gas going into new areas.

MR. COMMISSIONER HOWLAND: Thank you.

MR. COMMISSIONER HARDY: Mr. Loughney, yesterday in reply to a question on what was a fair return on your investment, you gave a figure, and what I would like to ask you is, what is that in your bookkeeping or in the industry bookkeeping, what do they figure are their costs in delivering gas? Is the fair return you spoke about -- would you base that on the cost of a single well -- you used the word "plant", for instance -- do you base it on the cost of the well and the plant that is necessary to process the gas, or do you base it on the cost of exploration in the field or an area, and how do you charge or distribute your costs of exploration between the oil and gas business, for instance, or how is it done in the industry?

MR. LOUGHNEY: We do not attempt to divide the cost between oil and gas wells in the field. In answering the question yesterday I had particular reference to plants, but as to wells, we normally consider 3 to 5 years for the payoff period.

MR. COMMISSIONER HARDY: Thank you.

To go back to the follow-up on the question Dr. Howland was asking, on the basis of the first approach to costing that you gave us yesterday, there seems to be no doubt that on the "Canada First" policy the price to the producer is depressed by the Eastern Canadian market. You told us you

start with a competitive price with other fuels in Toronto and Montreal and you work back and arrive at a figure that is left over, and that is what the poor old producer takes.

MR. LOUGHNEY: Yes.

MR. COMMISSIONER HARDY: You are subsidizing, as producers, at the present time the "Canada First" policy. Everyone has admitted to us here, without exception, everyone has said that the supply of gas should be protected in Canada. However, where the argument always arises is on this price protection, but you have a price differential immediately as soon as you raise your method of figuring, what is left over for the producer on this "Canada First" policy and, as I see it, the Alberta consumer, if you are going to guarantee the Ontario and Quebec market, is getting a financial advantage due to the depressed price, if you like, to the producer.

MR. LOUGHNEY: I think you have reference to the story on the Trans-Canada contract?

MR. COMMISSIONER HARDY: Well, the process you gave us yesterday. You said you started with the competitive price at the end of the line in Eastern Canada and worked back.

MR. LOUGHNEY: That is right.

MR. COMMISSIONER HARDY: That is your first approach to pricing?

MR. LOUGHNEY: The statement I made yesterday in answer to questions of Mr. Pattillo regarding our differences of opinion, we will call it that, with Trans-Canada in the early negotiations was around that very point. We felt that the 10¢ price we had been offered was not the proper price, and we were attempting to negotiate with Trans-Canada so that, having made some contribution in accepting the lower price in the early stages of Trans-Canada, we would be able to share in the good fortunes of Trans-Canada by getting a better price when they were able to pay it, and we do have those provisions in the contract. When the earnings of Trans-Canada reach 7 1/2 per cent, if it is before January 1st, 1968 we can call for a re-negotiation of contract; in any event, by January, 1968 the contract is to be re-negotiated.

MR. COMMISSIONER HARDY: But nevertheless, in the final analysis the price that you get is going to be determined by the competitive level, or some economic level, at which the gas can be sold at the far end of the pipeline?

MR. LOUGHNEY: Well, that is the source of revenue as far as the pipeline is concerned -- is the ability to take markets away from other types of fuel.

MR. COMMISSIONER HARDY: Well, if we look at it now from the point of the American

authorities, as it has been explained to us here, as I understand it they never got into the two-price argument in the United States because the regulatory authorities that would have made it possible were declared to be unconstitutional at the State level. That is my understanding of the information that has been given to us here, so that we cannot actually draw on the American experience, as I see it, for any guidance as to what extent you can adopt a two-price system other than their export tariff on gas which they have; is that not right?

MR. LOUGHNEY: I am not familiar with the constitutional question that has arisen in the States in the last few years, I have not tried to keep up with it.

MR. COMMISSIONER HARDY: You obviously would not like an export tariff on gas as a producer?

MR. LOUGHNEY: No.

MR. COMMISSIONER HARDY: It reduces the economic area?

MR. LOUGHNEY: Yes.

MR. COMMISSIONER HARDY: But, on the other hand, you would have no objection to selling, for instance, your gas in a competitive market to Alberta Trunk Line, and they could dispose of the gas any way they like at any price they like? As a producer you would not be concerned about that, would you?

MR. LOUGHNEY: For us to sell to Alberta Trunk Line and no one else?

MR. COMMISSIONER HARDY: Well, supposing there is one authority set up in the Province; they would buy all the gas. Or, another way to do it, or to look at it, would be this: that the pipeline companies outside the Province negotiate with the producer just as they do now, but Trunk Line eventually gets all the gas before it goes to the people who purchase from you, and they can muddle the stuff all up and send it out the other end at any price they want to or send it here or there at a different price. That would not affect the producer at all, obviously.

MR. LOUGHNEY: Well, there are several problems that I can see in connection with that kind of deal that I would not like. In the first place, when we build our plants we want to have assurance that the gas will be taken, that is the revenue to us. To that end we have guaranteed take-or-pay contracts. We have those with the purchaser of the gas who is the pipeline company. I can foresee that there would be some real problems arise if you had one common purchaser, and we would not have the same assurances of steady revenue or plants as we would have under the normal type of contract that we have at the present time, with its take-or-pay provisions.

MR. COMMISSIONER HARDY: Thank you, that is all.

MR. FRAWLEY: Mr. Chairman, may I ask a question arising out of Dr. Howland's questions?

THE ACTING CHAIRMAN: Yes, certainly.

MR. FRAWLEY: Q. Could I put it this way, Mr. Loughney: what the producer gets, you say, if it is not too overly simplified, is the price at the end of the pipeline less transmission costs; that is the net back at the well?

MR. LOUGHNEY: I was asked a question, Mr. Frawley, I am not sure just how the question was asked, but it was as to how did we determine or how did we place a price on gas -- in our judgment, what should gas sell for. I answered the question by saying that we first looked at the market where the gas was going to be sold to see what the competitive situation was with other fuels, and back that up to the wellhead by deduction of distribution and transmission costs, and we felt after that the producer was to be given all that he was entitled to. That would be one way of doing it.

MR. FRAWLEY: And that the wellhead net back would become better as the volume stepped up and the transmission cost per unit went down?

MR. LOUGHNEY: That is right, and that becomes the basis of the escalator clause, the time volume?

MR. FRAWLEY: What I want to investigate is the difference between the "Canada First" policy and the United States export policy. Supposing in California, because of the great hunger for further energy, that the price at the end of the pipeline was higher -- we will not get into any figures, but it was higher by some worthwhile amount than the price at the end of the pipeline in Montreal. Then, on your theory that the wellhead net back should be the price in the market less the transmission cost, well, then, the net back at the well would be better if it were going to California than if it were going to Montreal. You contemplate that situation and you are quite satisfied with it, is that so?

MR. LOUGHNEY: I do not necessarily contemplate it, no; I do not know that that will be the situation.

MR. FRAWLEY: Well, you say -- and I might say, very commendably, because you came here from the United States, did you not?

MR. LOUGHNEY: Yes.

MR. FRAWLEY: I say very commendably you say this gas belongs to the people of Canada, and you are satisfied it should go to the people of Canada, and am I right in following that up by saying that even if the whole net back were something less because it was not going to a market where the retail price was not as high as if it was going

to a market somewhere else -- you say, for instance, that it is a perfectly satisfactory situation to us, and you think it will get better as the unit transmission cost goes down?

MR. LOUGHNEY: Well, if the situation improves. We were not very happy about the 10¢ price; we felt the market potential was in Eastern Canada and as the volumes grew and the transmission costs were reduced, we would be in a position to enjoy a better price. We were then looking at the market that was available to us, which was the Eastern Canadian market; this California market which you refer to comes in at a later time, or may come in, I am not sure.

MR. FRAWLEY: And to the extent that there is any subsidizing, as Dean Hardy suggests, by reason of the fact that the gas is going to Eastern Canada, for the same reason the Alberta consumer is getting the benefit of that depressed price because he has it before any transmission cost is added on?

MR. LOUGHNEY: Well, I do not consider it exactly in the form of a subsidy. The new lines and the new markets, where the markets grow and must grow in order for the pipeline to pay a better price, and that is normal in negotiating the purchase of gas; we would have a starting price and then you have the escalator clause and the escalator

clause is to take care of that situation. We have this in our contract with Trans-Canada.

MR. FRAWLEY: Thank you, Mr. Loughney.

THE ACTING CHAIRMAN: Mr. Loughney, I think this completes our study, so on behalf of this Commission I wish to express our sincere thanks to yourself and your colleagues for submitting this brief, which we have already classified as a perfect brief. We realize you have had to go through a great number of statistics to make this up, but you may be sure it will not end up in the waste basket because during the next 30 days we will be reading it many times. We agree with you on many points and we think like you, and you will realize this better when we make our recommendations public later on. We welcome, with pleasure, the first paragraph of this brief which says that at a later date you will submit your views on other subjects.

Once again may I say thank you, and we will see you at a later date.

Perhaps, Mr. Pattillo, it will be best to break now and start with the next brief afterwards.

MR. PATTILLO: We will take Northern National when we resume after the break.

---A short recess.

Submission of

NORTHERN NATURAL GAS COMPANY

APPEARANCES:

Mr. E.J. Chambers, Q.C.	- Counsel
Mr. John F. Merriam	- President
Mr. W.A. Strauss	- Administrative Vice-President
Mr. F.L. Gagne	- Market Analyst
Mr. J.M. Barton	- Vice-President of Northern Natural Gas Producing Company.
Mr. Dale TeKolste	- Legal Department, Omaha.

THE ACTING CHAIRMAN: We will now start with Northern Natural Gas Company.

Mr. Pattillo?

MR. PATTILLO: Mr. Chairman. Mr. Chambers is appearing for Northern Natural Gas Company, and in a few minutes I will ask him to introduce to the Commission the representatives of the company who are here.

They have submitted two documents: one, the blue-covered book, which I suggest should be marked C-27-1, and the brown-covered book, which I suggest be marked C-27-2.

---EXHIBIT NO. C-27-1: Brief submitted by Northern Natural Gas Company.

---EXHIBIT NO. C-27-2: Supplement.

MR. CHAMBERS: Thank you, Mr. Pattillo.

I would first like to introduce to the Commission Mr. John F. Merriam, who is president of Northern Natural Gas Company.

Mr. W.A. Strauss, administrative vice-president.

Mr. F.L. Gagne, market analyst of the company.

Mr. J.M. Barton, vice-president of Northern Natural Gas Producing Company.

And Mr. Dale TeKolste of the legal department in Omaha, who may have something to say.

The brief, Exhibit C-27-1 will be presented by Mr. Strauss, administrative vice-president of the company.

MR. STRAUSS: Mr. Chairman, this brief is entitled "Northern Natural Gas Company, to the Royal Commission on Energy".

Introduction: Northern Natural Gas Company, a major integrated natural gas transmission company in the United States, respectfully submits this brief in the hope that it will assist the Commission in its study of some of the matters referred to it.

The information and data presented herein include a description of the natural gas operations of Northern Natural Gas Company over its 27-year history, an outline of the activities of the company during the past 8 years evidencing its continuing interest in Canadian gas, a brief description of the development of the natural gas industry in the United States, and data respecting the growth of the company's markets in the United States. Information relating to the exploration and production activities of the company's producing subsidiary in the Province of Alberta is also included.

Description of Northern Natural Gas Company: Northern Natural Gas Company, a corporation, with its head office in Omaha, Nebraska, U.S.A., is engaged in the production, transmission and sale of natural gas. It sells and distributes natural gas in the States of Kansas, Nebraska, Iowa, South Dakota and Minnesota, and is currently seeking authority to extend service into Wisconsin and North Dakota. These several states are sometimes hereinafter referred to as the Northern Plains States or Northern Plains area of the United States.

The company, "Northern", was organized and commenced operations in 1930.

At the present time Northern, directly and through subsidiaries, owns, operates and maintains more than 11,500 miles of pipelines which extend

from the gas producing States of Texas, New Mexico, Oklahoma and Kansas into the Northern Plains States where it delivers approximately 1 1/4 billion cubic feet of natural gas daily. A map showing the location of Northern's system is contained in its 1956 Annual Report to its stockholders, a copy of which is attached as Schedule A to this submission.

Northern is also authorized to transact business in the State of Montana and in the Province of Alberta.

Northern presently supplies natural gas to 880,000 retail customers located in 387 communities in the Northern Plains area. Among the principal cities in this area being supplied natural gas by Northern are Minneapolis, St. Paul, Rochester, Sioux City, Des Moines, Dubuque, Aberdeen, Sioux Falls, Lincoln and Omaha. In 1957 Northern sold approximately 350 billion cubic feet of gas to the communities and industries served from its pipeline system, nearly 3 1/2 times its sale 10 years ago. Additional data and information respecting Northern's present markets and projections and estimates of Northern's growth are set forth at Chapter IV hereof beginning at Page 14.

Northern's principal proved gas reserves are located in the Hugoton field and adjacent areas of Kansas, Oklahoma and Texas, the West Panhandle field of Texas and the Permian Basin area of west

Texas and southeastern New Mexico. These reserves total approximately 12 trillion cubic feet.

Northern Natural Gas Producing Company, a wholly-owned subsidiary, is engaged in the exploration for, and production of, gas and oil. At the present time operations are being conducted in the Province of Alberta and in the States of Montana, North Dakota, South Dakota, Nebraska, Colorado, Utah, New Mexico, Texas, Kansas, Oklahoma and Arkansas. This subsidiary is also authorized to transact business in the States of Arizona, Louisiana, Oregon, Washington and Wyoming.

Permian Basin Pipeline Company, a subsidiary, is a natural gas pipeline company. It operates in Texas and New Mexico where it transports gas from numerous gas producing fields to a point in west central Texas where such gas is sold to Northern.

Another wholly-owned subsidiary, Northern Plains Natural Gas Company, is authorized to transact business in the States of Montana, North Dakota, Minnesota, Wisconsin, South Dakota, Iowa and Nebraska.

Peoples Natural Gas, formerly a separate and wholly-owned subsidiary company, is now operated as a division of Northern. It distributes natural gas at retail in 110 communities and to numerous industrial plants in the States of Minnesota, Iowa, Nebraska and Kansas. It also holds

franchises authorizing the distribution of natural gas in 118 additional communities in these states.

The net assets of Northern and its subsidiary companies exceed $430,000,000. Its consolidated total capitalization consists of approximately $220,000,000 funded debt, $44,000,000 preferred stock and $135,000,000 common stock equity. Northern's own funded debt ($195,000,000) consists entirely of unsecured debentures; it has no pipeline mortgage bonds. Its 4,000,000 shares of outstanding common stock are listed on the New York and Midwest Stock Exchanges and are held by approximately 19,000 stockholders residing in all 48 states, Canada, and several other countries. No single stockholder holds more than 3 per cent of Northern's outstanding common stock.

Additional financial statistics, a balance sheet and an income statement, all as of December 31, 1956, are contained in Schedule A. The statistical data set forth at pages 26 and 27 of Schedule A detail Northern's growth since 1930.

In that regard we are today mailing copies of our 1957 Annual Report to our stockholders and copies of that report are available. We have them with us today, and will file them if the Commission so desires.

CHAPTER II: Nature and Extent of Northern's Interest in Canadian Natural Gas: Because of its economic and geographic proximity, Northern

has had a continuing interest in the natural gas reserves of Alberta since the magnitude of such reserves was first recognized. This interest has coincided with the rapidly increasing demands for natural gas which have persisted in Northern's market area since World War II.

Negotiations and Activities Respecting Purchase of Canadian Gas: In 1950 Northern commenced negotiations with Gulf Oil Company and others for the purchase of gas from the Pincher Creek area in Alberta.

On October 22, 1951, Northern and Western Pipe Lines, (a corporation incorporated by Private Act of the Parliament of Canada and hereinafter referred to as "Western") executed a contract providing for the sale and delivery by Western of from 100 to 250 million cubic feet of gas per day to Northern at the international border south of Winnipeg.

In 1951 hearings were held before the Alberta Petroleum and Natural Gas Conservation Board on Western's application to export gas from Alberta. Mr. J.F. Merriam, President of Northern, and other officials of the company appeared at these hearings in support of Western's application and presented evidence respecting the gas market in the Northern Plains area of the United States. (Before The Alberta Petroleum and Natural Gas Conservation Board, in the

matter of a joint hearing to determine various questions relating to the proposed export of natural gas from the Province of Alberta, 1951, volume 32, pages 3015-3039; 3083-3091; 3120-3148, December 12, 1951.)

Following the merger of Western and Trans-Canada Pipe Lines Limited (Trans-Canada), Northern's officials presented additional evidence before the Alberta Board in 1953 and 1954 respecting Northern's existing and potential market. (Before the Alberta Petroleum and Natural Gas Conservation Board, in the matter of a joint hearing, supra, note 1 above, 1953, volume 21, pages 1486-1498, volume 22, pages 1510-1559, July 13-14, 1953; and 1954, volume 47, pages 3483-3499, March 24, 1954.) At that time it was comtemplated that Trans-Canada's plans would soon be perfected and the Federal Power Commission hearing resumed.

On June 3, 1955, Trans-Canada, following negotiations with Tennessee Gas Transmission Company (referred to hereafter as Tennessee), notified Northern of its termination of the September 16, 1954, agreement.

Because it was learned that delivery of an interim supply of gas from the United States into eastern Canada might be a consideration affecting Canadian policy respecting the export of Canadian gas into the Northern Plains area of the United States, Northern and two other pipeline companies, on July 21, 1955, offered (1) to purchase from Trans-Canada at the Canadian border south of Winnipeg such quantities of natural gas as were

available, (2) to deliver, simultaneously, such volumes of natural gas to eastern Canada as were required by those markets and supported by the deliveries south of Winnipeg, and (3) to purchase for sale in United States markets, the volumns of gas not required for delivery to eastern Canada. This proposal was not accepted by Trans-Canada.

On August 11, 1955, Trans-Canada and Tennessee executed an agreement whereby Tennessee would purchase from Trans-Canada 200 million cubic feet of gas per day at the international border near Emerson, Manitoba. Tennessee subsequently assigned this portion of the agreement to Midwestern Gas Transmission Company.

The August 11, 1955, agreement further provided for the delivery of natural gas by Tennessee to Trans-Canada at the international border in eastern Canada, to meet the peak requirements of Trans-Canada's customers in eastern Canada. This arrangement, as subsequently amended and disclosed in proceedings before the Federal Power Commission, (Federal Power Commission, Docket No. G-9449, Exhibit Nos. 51, 217 and 218.) was to continue for a period of 3 years or, at Trans-Canada's option, until the main Trans-Canada pipelines was completed for delivery of Alberta gas to eastern Canada. Trans-Canada also had the option to increase the contract term to 20 years. No steps have been taken to effectuate this arrangement and apparently it has been abandoned by both parties. Trans-Canada recently has made other arrangements for the gas currently needed by it in eastern Canada and

Tennessee recently stated that it is "very doubtful if Tennessee will ever furnish any gas for the Montreal market." (Federal Power Commission, Docket Nos. G-2306 et al., Transcript Page 12,228, October 11, 1957.)

Northern has continued to evidence its interest in Canadian gas. On May 28, 1957, Northern's president testified before the Federal Power Commission as follows respecting Canadian gas:

"Q. Mr. Merriam, will you state what is Northern's policy respecting the purchase of Canadian gas from Midwestern Gas Transission Company?

"A. Subject to the Federal Power Commission's approval with respect to terms and conditions of contracts, Northern would be willing to buy gas from Midwestern Gas Transmission Company at either the Canadian border at Emerson, or at a point near Grand Forks to take the gas into Northern's system, all of the Canadian natural gas that Midwestern is authorized by the Federal Power Commission to import, and Northern would be willing to accept from the Federal Power Commission a certificate authorizing such gas purchased and the construction of the connecting facilities and service of the intervening markets.

"Q. Mr. Merriam, what is Northern's policy respecting the purchase of

gas from Trans-Canada Pipelines?

"A. gas from Trans-Canada Pipelines?

"A. Northern would be willing to pruchase gas from Trans-Canada if it were free to sell it to Northern under the contract of September, 1954, which is Exhibit 63, I believe, in this consolidated docket, or under terms and conditions similar to that referred to for the purchase of gas from Midwestern at the Canadian border, near Emerson." (Federal Power Commission, Docket Nos. G-2306, et al., Transcript Pages 1763-64, May 28, 1957.)

This testimony was confirmed by Mr. Merriam before the Federal Power Commission on December 2, 1957. (Federal Power Commission, Docket Nos. G-2306, et al., Transcript Pages 16,887-16,888, December 2, 1957.)

EXPLORATION AND PRODUCTION ACTIVITIES IN CANADA: Since 1951 Northern through its producing subsidiary, has actively participated in the development of Albertan gas reserves through significant exploratory and drilling activities.

In 1952 Northern acquired and interest in 78,000 acres in the Savanna Creek area and commenced drilling a well on this acreage. To date 3 successful wells and one dry hole have been completed in this field and 3 additional wells are being drilled.

Since 1952 Northern has acquired acreage in a number of other producing and prospective areas and at the present time holds interests such as

leases, reservations and options, which permit exploration activities covering 150,000 acres. The fields or prospective gas areas in which reservations or leases are held include Provost, Kennedy Creek, Wild Horse, Priddis and Pekisko. Northern is also producing oil from wells drilled by it in the Pembina and Westward Ho fields.

Northern currently has over $9,000,000 invested in oil and gas properties in southern Alberta and, like other producrs in Alberta, is keenly interested in the development of appropriate export markets. Northern has contracted to sell gas from its Savanna Creek reserves to Westcoast Transmission Company Limited. This contract also provides that, when the volums available to Westcoast from sources in southern Alberta total 300 million cubic feet per day, Northern may purchase from Westcoast the next 200 million cubic feet per day that Westcoast acquires.

Brief History of the Natural Gas Industry In The United States: A brief history of the growth and development of the natural gas industry in the United States is included in this submission in the hope that such information will be helpful to the Commission.

Prior to 1925 the natural gas industry was essentially confined to the local production and marketing of natural gas. The technology of long distance, high pressure transmission of natural gas had not yet been fully developed. Because markets for natural gas were small and competition for reserves was limited, prices in the fields were depressed. In 1925 estimated U.S. gas reserves totaled 23 trillion cubic feet, 3,500,000 customers in 23 states were being supplied with natural gas and 1 trillion cubic feet were consumed in that year. (Statistics from Federal Power Commission Natural Gas Investigation, Docket No. G-580, Pages 45 and 238 (Smith-Wimberly Report)).

The initial construction of what are now known as the "long lines" began in the late 1920's coincident with the perfection of the manufacture of steel pipe capable of transporting gas for long distances at high pressures. By 1940 the initial long distance pipelines that now serve Memphis, New Orleans, Atlanta, Birmingham, Chicago, St. Louis, Kansas City, Omaha, Denver, Minneapolis, Detroit, the Appalachian industrial center and southern California had been constructed. In 1940 estimated U.S. gas reserves totaled 85 trillion cubic feet,

7,500,000 customers in 34 states were being supplied and 2 3/4 trillion cubic feet were consumed for all uses in that year. (Statistics from Gas Facts, 1951, published by the Bureau of Statistics, American Gas Association, Tables 7, 27, and 67.)

Except for the construction of a pipeline from the Gulf Coast area of Texas to serve as a supplementary supply for the Appalachian industrial centers of Pittsburgh, Cleveland, Columbus and Cincinnati, major long distance pipeline construction and expansion were at a virtual standstill during World War 11.

Immediately following World War 11 and continuing until the present time there has been a vast and vigorous expansion of pipeline construction and natural gas service. Natural gas is now supplied in 46 of the 48 states. Reserves are obtained in 23 producing states and from Canada and Mexico. At the end of 1956 U.S. gas reserves totaled approximately 238 trillion cubic feet, over 10 trillion cubic feet were consumed for all uses and 25,000,000 consumers utilized natural gas. (Statistics from Gas Facts, 1956, Tables 2, 17, 47, 77,179, 184 and 186.) More than 489,000 (Statistics from Gas Facts, 1956, Tables 2, 17,47,77,179, 184 and 186.) miles of transmission and distribution pipelines are currently in operation powered by over 5 1/2 million (Statistics of Natural Gas Companies, 1956, published by the Federal Power Commission.) compressor horsepower. By 1956 total plant investment in transmission and distribution facilities exceeded$13,800,000,000. Industry-wide

operating revenues totaled $5,400,000,000; funded debt was in excess of $6,000,000,000 and common stock equity exceeded $2,400,000,000. (Statistics from Gas Facts, 1956, Tables, 2,17, 47, 77, 179, 184 and 186)

In the period 1925 through 1957 comprehensive regulation of the natural gas business has been enacted at both state and federal levels. State regulation has been principally concerned with production and production practices in the field and with the regulation of the price of natural gas at the consumer burner tip. Federal regulation was first invoked in 1938 (the Natural Gas Act) and was concerned with the operations of the long distance, interstate transmission pipelines. This regulation, as amended, encompasses the construction and operation of facilities involved in the transportation of natural gas in interstate commerce, pipeline sales of gas in interstate commerce for resale (wholesale sales) and the rates at which such sales are made.

The recent decision of the Supreme Court of the U.S. in Phillips v. Wisconsin, 347 U.S. 672 (commonly known as the Phillips decision), has extended federal regulation to all sales in interstate commerce for resale, whether made by the producer or the interstate pipeline transporter.

State regulation of production and production practices encompasses such matters as: prevention of waste, prohibition of flaring, proration, ratable take, gas oil ratios, and well spacing.

There is not federal regulation of the "end use" of natural gas. Nor has any federal regulation been enacted which integrates natural gas into any overall, comprehensive scheme of control of all U.S. energy resources. Natural gas has been and remains free to compete with coal, oil and hydro-electric power. Today natural gas provides over 25 per cent of the total energy fuels used in the U.S. (Gas Facts, 1956, Table 14.)

NORTHERN'S MARKETS: General: The market Northern presently serves is located in the Northern Plains States of Kansas, Nebraska, Iowa, Minnesota and South Dakota. Northern currently proposes to extend service to additional markets in North Dakota and Wisconsin. The population of this market area is approximately 7,500,000 persons of whom 1,500,000 live in the Minneapolis-St. Paul metropolitan area.

The region is one of the most productive agricultural areas in the United States. Its main products include corn, wheat, other small grains, livestock and dairy products. The principal agriculture-based industries include meat packers, millers of sugar, flour and cereal, creamery and produce houses as well as a large variety of frozen and canned food processors. Over 26 per cent of the United States meat and over 36 per cent of its small grains crops are produced in the area.

The area has natural resources that form the basis for a manufacturing industry that holds

a significant position in the national economy. This manufacturing industry at the present time contributes almost as much to the regional economy as does agriculture. The principal industries in this area produce electric power, cement, gypsum products, building materials, ceramics, farm implements, chemical fertilizer, glass products, iron ore and paper. Over 100 Industrial Development Corporations have been organized in this area and are actively developing additional industrial and economic growth in the region.

Thus, the broad agricultural base of this area, coupled with its strong and diversified manufacturing industry, provides this region with a sound and growing economy.

The use of natural gas as a fuel has increased rapidly since Northern began its transmission operations in 1930. At the end of the first year of operations, Northern supplied the requirements of only 188,000 persons representing 18,000 total consumers. Due to increased product acceptance, more efficient transmission methods and continued expansion into new markets, at the year end 1957 Northern was supplying the requirements of 3,256,000 persons representing 880,000 consumers.

These consumers use natural gas for a wide variety of purposes. The residential and commercial consumer uses natural gas for cooking, water heating, refrigeration, incineration, clothes drying, space heating and air conditioning. Annual sales and system capacity required for these

purposes have increased continuously since 1930. This is due not only to an increase in consumers but to the development of new and better gas burning appliances with resulting acceptance by the ultimate consumer.

The utilization of natural gas as an industrial fuel and raw material has experienced an appreciable technological advancement since 1930. As a fuel it is used in the production of electric energy, in meat packing plants, in dairy and food processing plants and in the manufacture of glass, rubber and paper products. In a different fuel application it is used in the manufacture of cement, brick and tile, and building materials. It is used in heat treating and metal fabrication such as the manufacture of farm implements and munitions. As a raw material, it is used in the manufacture of chemical fertilizer and in the production of helium.

Annual sales for industrial purposes also have increased continuously since 1930. These industrial sales, made during off-peak periods when the capacity of the system is not required for heating and other firm uses, permit Northern to operate at a high system utilization or load factor. During 1957 its system operated at over 80 per cent utilization factor. Total annual sales for Northern's system during 1957 amounted to 352 billion cubic feet. In order to attain these sales and satisfy the requirements of its consumers, Northern increased its system salable capacity 60 fold since 1930. Northern's historical growth in service is summarized in the following table:

	1930	1940	1950	1957
Total Annual Sales in MMcf	589	53,734	167,286	352,090
Daily Salable Capacity in MMcf-Beginning of year	20	189	489	1,196
Population Served-Year End	188,000	1,654,000	2,379,000	3,256,000
Total Consumers-Year End	18,000	381,000	614,000	880,000
Consumers Using Gas for Space Heating-Year End	1,400	69,000	297,000	683,000
Space Heating Saturation-Year End	8%	18%	48%	78%

Northern is continuing to implement its planned program of expanded service. Increases in daily capacity with corresponding growth in annual sales will result from increased service to the presently served communities and to communities which have been proposed for service.

Northern's expansion programs as currently proposed will require, for the expanded system, a fifth year salable capacity of 1,849 million cubic feet per day. This capacity will provide service to 4.7 million persons representing 1,260,000 ultimate consumers. Approximately 83 per cent of these consumers will use natural gas for space heating purposes. The annual sales resulting from this projected service are estimated to be 534 billion cubic feet. The projected growth in service expected by Northern is summarized in the following table:

	Expanded System Market		
	Actual 1957	First Year	Fifth Year
Total Annual Sales in MMcf	352,090	446,000	534,000
Daily Salable Capacity in MMcf-Beginning Year	1,196	1,465	1,849
Population Served-Year End	3,256,000	4,436,000	4,727,000
Total Consumers-Year End	880,000	1,119,000	1,260,000
Consumers Using Gas for Space Heating-Year End	683,000	862,000	1,040,000
Space Heating Saturation -Year End	78%	77%	83%

The area Northern serves is recognized as a high fuel cost area in the United States and is generally remote from the effects of inexpensive water borne transportation. Because of these facts and despite recent increases in natural gas wholesale rate levels, Northern's position in relation to the cost of fuels competitive with natural gas has been and is expected to remain favourable. This is particularly true of those residential, commercial and industrial markets where the alternative fuel is oil or liquified petroleum gas. It is likewise true as respects coal, although admittedly in recent years there has been some narrowing of the price differential between coal and natural gas.

The cost of new capacity additions will materially affect Northern's ability to maintain

and lengthen its current competitive advantage as respects other fuels. In this regard Northern has been most fortunate to have been able to develop a large underground storage field near the very heart of its system at Redfield, Iowa.

The operation of this storage reservoir has been fully tested for system use during the current winter season and Northern presently has pending before the Federal Power Commission an application authorizing the use of storage to provide increased system capacity.

The incremental cost of such a capacity addition is substantially below the cost required to provide the same capacity by constructing additional facilities throughout the length of Northern's system from west Texas to Minnesota.

By the same token the introduction of new Canadian gas supply at the Minnesota terminus of its system, close to its largest current market, will enable Northern to provide still further incremental system capacity at relatively lower cost.

Conclusion: The need for additional gas supplies for growth of existing service and for new markets, coupled with the need to replace the volumes consumed annually from its system, require Northern continually to seek additional sources of gas supply. Additionally, Northern's current cost advantage over competitive fuels, its high utilization factor and its ability to use underground storage are significant factors contributing to its ability to absorb and market substantial additional quantities of natural gas.

Favorable economics of the pipeline investment required to bring additional gas supplies to its markets result from the geographical location of the Alberta reserves in relation to Northern's existing system facilities. Further economies could be effected by system flexibility resulting from the location of sources of supply at each end of Northern's main transmission system. Therefore, as a part of its program to obtain reserves to support its system's growth, Northern has turned to Canadian gas as an economically advantageous source of supply.

The same factors of market economics and capital cost which prompt Northern to seek a Canadian source of supply provide to suppliers the economic advantages of utilization of Northern's facilities as a vehicle for bringing Canadian gas

to substantial and growing markets in the United States.

Respectfully submitted and signed by John F. Merriam, President.

MR. CHAMBERS: If the Commission pleases, we would like to submit the 1957 consolidated balance sheet, because it has some material in it in addition to the financial set-up that may be of interest to the Commission.

MR. PATTILLO: I suggest that be marked as C-27-1-A.

---EXHIBIT NO. C-27-1-A: Northern Natural Gas Company consolidated balance sheet, 1957.

MR. CHAMBERS: If the Commission pleases, before the supplement, Exhibit C-27-2, is presented by Mr. Merriam, the president of the company, I would like to state that Northern and the individuals concerned would desire, if the Commission pleases, to be sworn as witnesses.

THE ACTING CHAIRMAN: What do you think, Mr. Pattillo?

MR. PATTILLO: Well, Mr. Chairman, if the company has asked to be sworn I think that should be done. I think we should have the submission, however, read in before we swear them and then we can question them. I have not read this supplement at all because I just received it this

morning, so I know nothing about the contents of it.

MR. CHAMBERS: Mr. Chairman, the reason I suggested swearing at this stage was that Mr. Merriam, as I understand it, in presenting Exhibit C-27-2, which consists largely of documents, as appendices, may desire to give some oral testimony---

MR. PATTILLO: All right. Mr. Registrar, will you swear the witnesses?

---Mr. W. A. Strauss, sworn.

---Mr. J. F. Merriam, sworn.

---Mr. J. M. Barton, sworn.

---Mr. F. L. Gagne, sworn.

---Mr. Dale Te Kolste, sworn.

MR. MERRIAM: Supplementary Statement of Northern Natural Gas Company:

The purpose of N rthern's main submission now on file with this Commission is to present data and information which show that Northern's pipeline system and markets provide a desirable export market for Canadian gas. While this continues to be the only purpose for Northern's submission and appearance before this Commission, testimony recently given concerning transactions and negotiations between Trans-Canada Pipe Lines Limited and

Northern makes it incumbent upon Northern to supplement its submission with the following:

(1) A copy of the contract dated September 16, 1954 between Northern and Trans-Canada (Schedule A);

A copy of the letter agreement extending the contract to April 30, 1955 (Schedule B);

(2) Documents evidencing the continued negotiations of Northern and Trans-Canada (Schedules C, D, E and F);

(3) Documents evidencing negotiations between Tennessee Gas Transmission Company and Trans-Canada prior to Trans-Canada's termination of its contract with Northern (Schedules G and H).

Is it desirable that I read the schedule as well as the brief supplement?

MR. PATTILLO: I think, if you would read the September 16th document, Schedule A, then I will have an opportunity, at lunch, of examining the rest and seeing if I want anything else read in.

MR. MERRIAM: Fine. This is a letter dated September 16, 1954, addressed to me at Northern Natural Gas Company and signed by Trans-Canada Pipe Line Company, Mr. Tanner, President.

As we have previously discussed in our several recent meetings, Trans-Canada Pipe Lines Limited, hereinafter sometimes called "Trans-Canada", proposes to construct a large diameter natural gas pipe line from the Province of Alberta, Canada, to a point at or near the City of Winnipeg, Manitoba, and thence to Eastern Canada. In connection with the sale hereinafter provided for, Trans-Canada also proposes to construct lateral lines from said main pipe line, one of which will begin at a point off the main line near Winnipeg and will run south to a point near the Town of Emerson, Manitoba, and another of which will run from a point off the main line to a point at or near either the Town of Estevan or the Town of North Portal, Saskatchewan, on the international boundary line.

Trans-Canada desires to sell to Northern Natural Gas Company, hereinafter sometimes called "Northern", and Northern desires to purchase from Trans-Canada, the volumes of natural gas at the prices, at the delivery point or points and upon the terms and provisions set out herein, and this letter constitutes our agreement concerning same.

1. Trans-Canada will deliver and sell to Northern at a mutually acceptable delivery point on the international boundary line near Emerson, Manitoba, Canada, on the west side of the Red River, but not

more than four (4) miles west of said river, up to a maximum of 100 million cubic feet (100,000 MCF) of natural gas daily, with first delivery and receipt to be commenced on October 27, 1955, or at such earlier date as may be agreed upon between the parties.

2. Trans-Canada will deliver and sell to Northern, beginning October 27, 1956, an additional quantity of 50 million cubic feet (50,000 MCF) of natural gas daily, said gas to be delivered at the option of Northern either at said point of delivery near Emerson or at a mutually agreeable point of delivery at or near the Town of Estevan or North Portal in the Province of Saskatchewan on the international boundary line.

3. In addition to the foregoing volumes of natural gas, Trans-Canada will endeavour to obtain all requisite approval and permits from all regulatory bodies of Canada having jurisdiction authorizing it to sell to Northern an additional quantity of 50,000,000 cubic feet (50,000 MCF) of natural gas beginning October 27, 1957, and, if all requisite authority and approval are so obtained by Trans-Canada, then Trans-Canada will deliver and sell to Northern, beginning on said date, said additional quantity of 50,000 MCF of natural gas, and out of the total quantity of 200,000 MCF of natural gas then deliverable by Trans-Canada to Northern hereunder,

150,000 MCF thereof shall be delivered at said point of delivery near Emerson, Manitoba, and the remaining 50,000 MCF may, at Northern's option, be delivered at said point of delivery near the Towns of Estevan or North Portal. It is provided, however, that in the event Trans-Canada has not procured all requisite approval and permits from all regulatory bodies of Canada having jurisdiction authorizing it to sell to Northern such additional quantity of gas by December 31, 1955, then Northern may terminate its obligation to receive and purchase such additional quantity from Trans-Canada by giving to Trans-Canada within the next succeeding thirty (30) days written notice of its election so to terminate.

4. If, in addition to the foregoing volumes of natural gas, Trans-Canada estimates it will have available an additional quantity of 50,000,000 cubic feet (50,000 MCF) available for export west of Lake Superior beginning October 27, 1958, then, as soon as is reasonably convenient for Trans-Canada to do so, but in any event prior to July 1, 1957, Trans-Canada shall notify Northern that it anticipates that it will have such gas available for sale and the price, terms and conditions under which such gas will be so available. Northern, on or before September 30, 1957, shall advise Trans-Canada whether Northern desires to so purchase such

volume of gas at such price and upon such terms and conditions. In the event Northern elects not to purchase such gas, its right to purchase provided for in this Paragraph 4 shall automatically terminate. In the event Northern so advises Trans-Canada that Northern does desire to so purchase such volume of gas, Trans-Canada and Northern will endeavor to secure all requisite approval and permits from such regulatory bodies having jurisdiction authorizing such purchase and sale and if all such authority and approval be obtained by Trans-Canada and Northern, then Trans-Canada will deliver and sell to Northern beginning October 27, 1958 said additional volume of gas.

5. If, in addition to the foregoing volumes of natural gas, Trans-Canada estimates it will have available an additional quantity of 50,000,000 cubic feet (50,000 MCF) available for export west of Lake Superior beginning October 27, 1959, then, as soon as is reasonably convenient for Trans-Canada to do so, but in any event prior to July 1, 1958, Trans-Canada shall notify Northern that it anticipates that it will have such gas available for sale and the price, terms and conditions under which such gas will be so available. Northern, on or before September 30, 1958, shall advise Trans-Canada whether Northern desires to so purchase such volume of gas at such price and

upon such terms and conditions. In the event Northern elects not to purchase such gas, its right to purchase provided for in this Paragraph 5 shall automatically terminate. In the event Northern so advises Trans-Canada that Northern does desire to so purchase such volume of gas, Trans-Canada and Northern will endeavor to secure all requisite approval and permits from such regulatory bodies having jurisdiction authorizing such purchase and sale and if all such authority and approval be obtained by Trans-Canada and Northern, then Trans-Canada will deliver and sell to Northern beginning October 27, 1959 said additional volume of gas.

6. Notwithstanding the actions of either party pursuant to the provisions of Paragraphs 3, 4 and 5 hereof, Trans-Canada hereby grants to Northern, or its nominee, a preferential right, during the term of this agreement, to purchase all gas (excluding such gas as has been offered to Northern by Trans-Canada and Northern has declined to purchase) which Trans-Canada may have available for export into an area in the United States bounded upon the east side by a line running south from the intersection of the international border and Lake Superior and on the west side by a line running south from the intersection of the state boundary line between North Dakota and Montana and the international boundary.

7. So long as the quantity of natural gas to be delivered at the point of delivery near Emerson hereunder is 100,000 MCF, said gas shall be delivered at said point at a pressure of at least 400 pounds per square inch gauge. In the event and when the maximum quantity of gas to be delivered at the delivery point near Emerson hereunder is 150,000 MCF daily, said quantity shall be delivered at said point at a pressure of at least 450 pounds per square inch gauge. In the event the maximum quantity of gas to be delivered at the delivery point near Emerson hereunder is 200,000 MCF daily, said quantity shall be delivered at said point at a pressure of at least 500 pounds per square inch gauge. In the event and when the quantity of 50,000 MCF of gas is to be made available at the point of delivery at or near the Towns of Estevan or North Portal, said quantity shall be delivered at said point at a pressure of at least 400 pounds per square inch gauge.

8. The unit of measurement for the natural gas to be delivered under this Agreement shall be one cubic foot at a base temperature of 60 degrees Fahrenheit and at a base pressure of 14.4 pounds per square inch absolute.

9. The gas to be delivered hereunder shall contain not less than 950 British Thermal Units (B.T.U.) per cubic foot. The monthly bill,

the demand and commodity rates, the billing demand and the minimum bills provided for herein all contemplate gas deliveries hereunder which shall have an average total heating value of 1,000 British Thermal Units per cubic foot. In the event that the average total heating value of the gas per cubic foot, measured on a dry basis at a pressure equal to 30 inches of mercury and at a temperature of 60° Fahrenheit, in any month falls above or below 1,000 B.T.U., an adjustment shall be made in the total amount which Northern would otherwise pay for gas delivered during such month if the total heating value were 1,000 B.T.U., provided however that no price adjustment shall be made for deliveries of natural gas having an average total heating value of more than 1,050 British Thermal Units per cubic foot. Such adjustment shall be determined by multiplying said amount so otherwise payable by a fraction, the numerator of which is a monthly arithmetical average total heating value per cubic foot and the denominator of which is 1,000.

10. The services rendered and the gas delivered hereunder shall be paid for in accordance with the following rates:

(a) For the services rendered and deliveries to be made near Emerson, a monthly demand rate of $2.10 per MCF of billing demand

and a commodity rate of $0.20 per MCF of gas delivered.

(b) For the services rendered and deliveries to be made near Estevan or North Portal, a monthly demand rate of $1.80 per MCF of billing demand and a commodity rate of $0.19 per MCF of gas delivered.

11. The billing demand at each point of delivery shall be that volume which is equal to the maximum volume of gas Trans-Canada is obligated to deliver per day at such point of delivery in accordance with the foregoing provisions of Paragraphs 1, 2 and 3 above. For example:

(a) The billing demand from October 27, 1955, to October 27, 1956, at the point of delivery at Emerson shall be 100,000 MCF.

(b) In the event Northern elects to receive the additional quantity of 50,000 MCF of gas referred to in Paragraph 2 above at Emerson, the billing demand at said point of delivery shall increase on October 27, 1956, to 150,000 MCF.

(c) In the event Northern elects to receive such additional quantity of 50,000 MCF of gas referred to in Paragraph 2 above at Estevan or North Portal, then, commencing October 27, 1956, the billing demand at Emerson shall be 100,000 MCF and the billing demand at

Estevan and North Portal will be 50,000 MCF.

(d) In the event the 50,000 MCF of gas referred to in Paragraph 3 above is made available, then on October 27, 1957, the billing demand at Emerson shall be increased to 200,000 MCF, except that if Northern has elected to take delivery of 50,000 MCF of such total quantity at Estevan or North Portal, then the billing demand at Emerson shall be 150,000 MCF and the billing demand at Estevan and North Portal shall be 50,000 MCF.

12. (a) The minimum monthly bill of Northern hereunder for the services rendered and gas delivered at each point of delivery hereunder shall be the sum of:

1. The demand charge times the billing demand expressed in MCF; plus

11. The commodity charge times the billing demand times the number of days in the particular calendar month being billed times .55.

(b) The minimum annual bill of Northern hereunder for the services rendered and gas delivered at each point of delivery hereunder shall be the sum of:

1. The demand charge times the billing demand expressed in MCF times twelve; plus

11. The commodity charge times the billing demand times the number of days in the particular annual period being billed times .75.

13. The commodity and demand rates set forth in paragraph 10 shall apply from and after the date of first delivery hereunder for a period of five (5) years.

During the five-year period commencing at the expiration of the first five-year period and ending five (5) years after the commencement of such second five-year period and during each

[illegible]

subsequent five-year period during the remaining term of this agreement, the commodity and demand rates shall be determined by negotiation and agreement by Trans-Canada and Northern as the fair, just and reasonable rates to be paid during each such five-year period.

Representatives of Trans-Canada and Northern shall meet and negotiate as frequently as necessary commencing six (6) months preceding the date in which the price to be paid hereunder is subject to possible change, for determination of the price to be paid during the ensuing five-year period.

In the event the parties hereto shall be unable to agree within thirty (30) days upon such rates then the fair, just and reasonable rates to be paid for gas delivered hereunder shall be determined by arbitration. For the purpose of arbitration, Trans-Canada and Northern shall each select one arbitrator and the two arbitrators shall select a third. A decision of a majority of said arbitrators, made in writing and delivered to the parties hereto, shall be binding. In the event the two arbitrators are unable to agree upon such third arbitrator, such third arbitrator shall be selected by a method to be agreed upon by the parties prior to the execution of the formal contract required herein. Such arbitrators shall render a decision within

sixty (60) days following appointment of the first arbitrator.

It is agreed that the rates specified in paragraph 10 are fair, just and reasonable at the time this agreement is entered into under presently existing circumstances.

14. The gas deliverable hereunder

(a) Shall be commercially free from dust or other solids or liquids which might interfere with its merchantability or cause injury to or interference with proper operation of the lines, regulators, meters or other appliances through which it flows; and

(b) Shall not contain more than one grain of hydrogen sulphide or twenty grains of total sulphur per one hundred cubic feet of gas as determined by standard methods of testing nor more than seven pounds of water vapor per million cubic feet of gas.

15. The gas delivered hereunder shall be measured by orifice meter or meters of standard manufacture installed, operated and maintained by Trans-Canada at or near the point or points of delivery hereunder.

16. Bills for the services rendered and gas delivered hereunder shall be rendered monthly by Trans-Canada to Northern and Northern shall dispatch to Trans-Canada for the services rendered

and gas delivered hereunder, on or before the twentieth day of each month or ten days following the presentation of a bill to Northern by Trans-Canada, whichever is later, in Canadian funds, at Trans-Canada's office in Calgary, Alberta, or at such other address in Canada as may be designated by Trans-Canada.

17. The term of this Agreement, and the formal contract to be executed pursuant hereto, shall be for a period from the date of acceptance hereof by Northern to twenty-five years following the date of first delivery of gas hereunder and thereafter from month to month until terminated by either party giving sixty days' notice in writing of such party's election to so terminate at the expiration of any such month.

18. The agreements on the part of each party hereto are, of course, subject to their obtaining all requisite approvals and permits from all regulatory bodies in Canada and the United States of America having jurisdiction over the matters contemplated hereby including, but without limitation, a permit to Trans-Canada to export from Canada the quantities of gas deliverable hereunder to Northern, the financing and completion of such proposed pipeline project by Trans-Canada in accordance with its present permit, the purchase and transportation by Trans-Canada of the requisite volumes of natural gas necessary to meet its commitments to Northern

hereunder, a permit to Northern to import the gas deliverable hereunder into the United States of America, a certificate of convenience and necessity to construct the facilities necessary to receive such gas, and Northern's financing and construction of the necessary facilities therefor. The agreements on the part of each party hereto are further subject to the approval of counsel for Trans-Canada as to the sufficiency, for the purpose of enabling the parties to fully perform this agreement, of all approvals and permits to be obtained from governmental and regulatory bodies in the United States, and to the approval of counsel for Northern as to the same for those to be obtained in Canada, it being understood that approval or disapproval of counsel shall not be unreasonably delayed or arbitrarily withheld.

19. The parties hereto shall proceed forthwith to prepare a formal contract embodying the provisions herein contained and other standard provisions to provide for the sale and receipt of gas agreed to herein, which contracts, when prepared and executed, shall supersede, in all respects, this Letter Agreement.

20. Trans-Canada agrees to proceed immediately with the steps necessary to procure the necessary permits and governmental authorities to carry out the provisions hereof, and Northern agrees to commence work immediately upon and continue to

proceed with diligence in filing and prosecuting the applications with the Federal Power Commission of the United States of America required to enable Northern to import the gas sold hereunder, to construct the facilities necessary for the receipt of said gas, and, after the procurement of said permits and certificates, to proceed with diligence in the financing and construction of all necessary facilities. In the event Trans-Canada has not received all necessary governmental permits and authority to export the gas deliverable hereunder by December 31, 1954, Northern may terminate this contract by giving written notice to Trans-Canada of its election so to terminate. In the event Northern has not procured all necessary governmental permits, certificates and authority to import the gas deliverable hereunder on or before December 31, 1954, Trans-Canada may terminate this contract by giving written notice to Northern of its election so to terminate.

If the foregoing correctly reflects your understanding of our Agreement, please signify your agreement and approval by signing the copy of this letter at the place designated below and returning same to us.

Yours very truly,

Trans-Canada Pipe Lines Limited.

By N.E. Tanner, President.

Agreed to and approved this 17th day of September, 1954.

Northern Natural Gas Company,

By J.F. Merriam, President.

THE ACTING CHAIRMAN: I think we will have to adjourn until ten minutes after two.

---Whereupon the hearing adjourned at 12.25 p.m. until 2.10 p.m.

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---On resuming at 2.10 p.m.

BY MR. PATTILLO:

Q. Mr. Merriam, dealing with the document, the folder marked C-27-2, you read to us this morning at my request parts of Exhibit A, and Exhibit B is simply a letter providing for the extension of time for you to apply to the F.P.C. from December 31, 1954 to April 30, 1955?

MR. MERRIAM: Yes.

Q. And when, in fact, did you apply to the Federal Power Commission, in January, 1955?

MR. MERRIAM: It was in October, I believe.

Q. Of 1954?

MR. MERRIAM: Yes, for an application for a permit to import Canadian gas.

Q. And had the Federal Power Commission ever made any ruling about that application?

MR. MERRIAM: Technically, no, I do not believe they had, but it is on file and it is consolidated in the hearing that has just finished recently in Washington. There is some technicality as to the status of the application, but technically it has never been dismissed.

Q. Now then, Schedule C is apparently a memorandum that you have prepared to give out to your customer companies, is that correct?

MR. MERRIAM: Yes.

Q. And reporting on telephone conversation that you had with Mr. Tanner in March of 1955 that Canadian gas would not become available during the year 1955.

MR. MERRIAM: That is correct.

Q. And then Schedule D is a letter from Mr. Tanner to you dated March 23 confirming the advices that were in your memorandum of March 17?

MR. MERRIAM: Right.

Q. And then Schedule E is your letter of March 28th to Mr. Tanner, and I want to read in particularly the second paragraph:

> "I will be glad to get together with "you at your convenience to discuss the "Northern Natural Trans-Canada plans as "they will need to be revised to fit the "changed circumstances."

What did you mean by that?

MR. MERRIAM: Well, there were a number of factors in the contract that obviously would have to be changed because of the one-year delay. For instance, the initial delivery date of 100 million cubic feet was for the fall of 1955, and after that provision in the contract for additional volumes went on from there. In respect to their dates, all those would have to be changed.

Q. Did you at any time indicate to Mr. Tanner or Mr. Coates or anybody else representing

Trans-Canada that, in addition to the provisions which you have mentioned, there would have to be a revision in price?

MR. MERRIAM: Not that there would have to be a revision of price. We discussed prices in relation to our application before the Federal Power Commission, and we discussed with them the possibility of a somewhat lower price than was contained in the contract to meet the objections of customers of ours raised before the Federal Power Commission. There was nothing in those conversations that in any way protracted any continuation of the contract or negotiations upon the success of those discussions.

Q. Now, your Schedule G, which is a copy of the draft contract, Tennessee Gas Transmission Company, and dated May 3, 1955, where did you obtain this document?

MR. MERRIAM: That is the document that Mr. Freeman of Tennessee Gas Transmission Company handed me on May 12, 1955.

Q. At your office?

MR. MERRIAM: No, in Washington, D.C.

Q. Now, did you ever discuss this document with Mr. Coates or Mr. Tanner?

MR. MERRIAM: Yes, I did.

Q. When?

MR. MERRIAM: May 13, when I got back to

my office I talked to Mr. Tanner immediately.

Q. About this document?

MR. MERRIAM: Correct.

Q. What did Mr. Tanner say?

MR. MERRIAM: Mr. Tanner said that yes, indeed, they had had negotiations between Trans-Canada and Tennessee Gas with respect to this proposed purchase as Mr. Freeman had related it to me, but they were so far along in their dealings with Tennessee Gas Transmission that they did not think they were free to talk with us further.

Q. At that stage you had not received the notice of termination?

MR. MERRIAM: No, I had not.

Q. That would be May 13, 1955, and the notice of termination was June 3?

MR. MERRIAM: That is correct.

Q. In addition to talking to Mr. Tanner on May 13, did you have any conversation with Mr. Coates?

MR. MERRIAM: I do not believe I ever talked to Mr. Coates. I did talk to Mr. Milner and various of our other people prior to June 3rd, talked to both Mr. Milner and Mr. Tanner.

Q. Mr. Tanner was where when you were talking to him?

MR. MERRIAM: I think each time he was in Calgary. This was by telephone.

A. And when you talked to Mr. Milner where was he?

MR. MERRIAM: He was jumping around the country. I think finally -- my final conversation with him was in British Columbia.

Q. That is Mr. H.R. Milner?

MR. MERRIAM: That is correct.

Q. Now, in this market area that your company serves in the United States, you have told us that it is a high cost area so far as fuels competitive to natural gas are concerned.

MR. MERRIAM: That is correct; there is no local coal or oil or gas of any consequence in the area.

Q. And what could you afford to pay MCF for gas delivered at Emerson?

MR. MERRIAM: We can afford to pay whatever we can justify from a competitive standpoint as compared with gas from other sources.

Q. Well, what is that figure?

MR. MERRIAM: The figure we had in our contract in Emerson, as I stated on the stand before the Federal Power Commission, was a price we felt we could justify. I also said we felt we could justify the price that Mid-Western and Tennessee had agreed to pay.

Q. Mr. Merriam, there has been evidence here which you probably have read, that the price

proposed to be paid at Emerson by Mid-West under this present contract will not yield a return of 7 1/2 per cent to Trans-Canada. Do you, based on your experience in this gas business over a period of almost 30 years, consider that a return of 7 1/2 per cent would be a fair return to a Canadian exporter?

MR. MERRIAM: Well, of course, my experience has been based on our circumstances in the United States, and the cost of money and the costs of construction down there and other factors ---

Q. As I understand, the return that is considered fair in the United States is 6 1/2 per cent.

MR. MERRIAM: We would be delighted to have 7 1/2 per cent on our investment in the United States. 6 per cent is as high as the Federal Power Commission has gone so far, but there are applications pending for 6 1/2 per cent, which the cost of money will support that higher rate.

Q. Because of where you live and everything I suppose you are pretty familiar with the situation in Canada?

MR. MERRIAM: Well, I am reasonably familiar with it, but sometimes I think I am very unfamiliar with it.

Q. Would you agree that, comparing costs in Canada with those in the States, a rate of return

of 7 1/2 per cent is not unfair?

MR. MERRIAM: Let me put it this way: we would be delighted to get 7 1/2 per cent return on any investment we might put in Canada of that character.

Q. What I want to get at is: this Commission is charged with looking into the question of what policy, if any, Canada should have regarding the export of natural resources of energy. Mr. Paul Kayser, do you know him?

MR. MERRIAM: Yes, I do.

Q. Mr. Kayser has said that he thought that in exporting gas from the country we should seek to get a price that would yield a return of 7 1/2 per cent. Would you agree with that?

MR. MERRIAM: Yes, I would not -- yes, I would agree with it.

Q. And provided the Federal Power Commission would approve of such a price, would you be prepared to pay such a price for gas exported?

MR. MERRIAM: Yes, if that would still result in a price at the border that we could justify purchasing in competition with gas from other sources.

Q. I would assume, then, in your system you are reasonably -- you have a good deal of line reasonably close to the Canadian border?

MR. MERRIAM: Well, we are about 300 miles from the Canadian border with our present lines.

Q. And in these projected lines?

MR. MERRIAM: The projected lines would come within 90 miles of the Canadian border.

Q. And I assume that with your present sources of supply you have done some studies to figures out how much it is going to cost you, making your return 6 per cent, to put gas to that point 90 miles from the Canadian border?

MR. MERRIAM: That is correct.

Q. What price do you figure that is going to be?

MR. MERRIAM: It is at the same price that we now have filed in our tariffs before the Federal Power Commission, which is a zone rate depending on distance from our present major sources of supply.

Q. And what would the price be?

MR. MERRIAM: I do not have it in mind. I think Mr. Gagne might be able to tell you.

MR. GAGNE: The rate which we presently have on file with the Federal Power Commission for Northern's proposed Zone C, which would be based on a demand charge of $3.49 1/2 per MCF of daily demand and a commodity charge, an overall charge, being 23.9¢.

MR. MERRIAM: That is for a delivery at the station in each community.

Q. Within that zone; and am I correct in thinking, then, that the way in which you find

out how much you can properly pay for Canadian gas is to figure out how much the cost of transmission would be from the border to that zone and subtract it from the rates which you have just mentioned here now, and allowing yourself a return on that cost of transmission, and you would have the competitive price that you would be able to pay at the border?

MR. MERRIAM: That does not necessarily follow.

Q. Well, will you explain why it does not, Mr. Merriam?

MR. MERRIAM: Mr. Strauss is in charge of our rate section and I will swing it over to him.

MR. STRAUSS: I think we have to understand what these zones are and where they are located to appreciate this problem. Northern fundamentally has a conglomerate of zones all at different prices; starting from the south end of our system we have zone 1, and we move progressively northward through the States and come into zones 2 and 3, and then we move into some proposed zones which are beyond the extremities of zone 3, which are zones B and C. Now, the gas that comes in from Canada would come in reverse order; the gas would be sold in zone C, progressively southward into zone B and progressively southward in Southern Minnesota in zone 3. So that when we make this comparison of purchase versus

investment we have to look at the various zones where this gas is going to find some of its destination. We have to look not only at the rates in zone C and zone B, but in zone 3. We have some other things to consider, and one is that we have some offsetting factors, and that is the cost of constructing facilities from the border into these market areas versus costs that would be required to build facilities from Texas to these areas.

Q. Yes?

MR. STRAUSS: So, with that explanation, I just wanted to point out you have to look at the costs in these other zones.

Q. Would you agree with me, Mr. Strauss, that certainly in arriving at the price you were prepared to pay at the Canadian border, you would not look to see how much it was going to cost you to move gas from Texas to merely zone 1 where you would have no intention of taking the Canadian gas?

MR. STRAUSS: I agree.

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Q. Now then, it has been suggested to me that the price which Mid-West is proposing to pay to Trans-Canada is not based on the competitive price in the area where the gas would physically go but at a point a great deal south of that point in the system. Is that correct?

MR. STRAUSS: I don't think I am going to venture an opinion on just what the price Mid-Western arrived at, what the basis of it was.

Q. Have you heard the suggestion that I have just put to you?

MR. STRAUSS: I have heard these two suggestions: one, that the price on the Mid-Western system has been geared, looking to the markets in Chicago; and two, that perhaps the form of the rate had been designed originally for competition with Northern zone rates.

Q. That is, your own rates?

MR. STRAUSS: Yes, particularly the figure supplied in the original form of rates. Since then they have changed that two or three times. Those are the things I have heard.

Q. These proposed rates in Zone C which were given to us a few minutes ago: what would they result in in a price per Mcf on, say, a 70 per cent load factor?

MR. GAGNE: I have them before me at 75 per cent load factor. That would be 39.4 cents,

at a 75 per cent annual load factor.

Q. And that would be something more at a 70 per cent load factor?

MR. GAGNE: Slightly more, yes, sir.

Q. What point on the international border would be the nearest point to your Zone C, this 90-mile distance?

MR. STRAUSS: Emerson.

Q. Emerson?

MR. STRAUSS: Yes, sir.

Q. How much, from your experience, Mr. Strauss, would it cost you, having regard to construction costs today and allowing yourself a return of $6\frac{1}{2}$ per cent, how much would it cost you to transmit gas that 90 miles?

MR. STRAUSS: I followed the proceedings here by reading the transcript. I noticed that the price per 100 miles is averaging between $1\frac{1}{2}$ cents and 2 cents for large volumes of gas. I certainly accept that figure.

Q. You would accept that figure?

MR. MERRIAM: You should, however, bear in mind that except for small volumes of gas that would be used at that point you would have to add the cost for getting the gas to the western market. I am in sympathy with your program but I want to be sure the facts are straight.

Q. Well, assuming you were able to get,

from the Canadian market, the quantities that you contemplated in your original proposal of 1954, how far, physically, would you move that quantity of gas in your system, how far south, in miles?

MR. MERRIAM: From Emerson into our system as we had it calculated at that time, is approximately 400 miles. As I recall it, there is somewhere between 30 and 40 million feet between Emerson and Minneapolis, so you would siphon off this volume as you went down and the balance would go into our system for commingling with other gas.

Q. That was the scheme then?

MR. MERRIAM: Yes.

Q. But with your proposed expansion, you would have the gas coming in at a point 90 miles and, from your study of the market in this proposed expansion area, how far would you be transporting that gas before it would be physically in the distributing company's hands?

MR. MERRIAM: Well, it would be spread out. Actually, the first market would be down between Emerson and Grand Forks, which is the point we have in hand, and there are some markets between there, some minor markets between there; then some would go off there, some in Grand Forks and some at Fargo and various other points on the route and, out of 100 million, you would have 70 or so million feet that would go all the way.

Now, we could take most of that gas -- I am getting into Mr. Strauss' field a little bit, but I will risk it -- we would have to do some revision in our proposed line to Grand Forks to increase the size of that line from about between Fargo and Grand Forks, but not by any tremendous amount, as I recall it.

Am I correct in that, Mr. Strauss?

MR. STRAUSS: Yes, sir.

MR. MERRIAM: You would not have a great investment in order to get that gas into our system from Grand Forks, south.

Q. Well, let us come back, again: having regard to the prices you have mentioned to us; having regard to the distance that you would move this gas physically; having regard to the cost of transmission the 100 miles to put it into your system from the border, would it be fair to say that you could afford to pay somewhere in the neighbourhood of 32, 33 cents per Mcf?

MR. MERRIAM: I don't know that I ought to guess with you on that. We would be delighted, if anybody was interested in selling us gas at the border, to make our calculations and see what would be justified before the Federal Power Commission in supporting the price.

Q. Well, I would suggest, Mr. Merriam, that you make the calculations and that you submit

them to the Commission.

MR. MERRIAM: We would be glad to do that.

I did have some points with respect to some of those schedules and, at the appropriate time, I would like to touch on them.

Q. Right. I would like -- well, all right. You touch on the schedules now, the schedules to Exhibit C-27-2, and tell us anything you want to tell us, Mr. Merriam, because I was going to ask you one question regarding the main brief.

MR. MERRIAM: Yes. With relation to Schedule B, there has been some discussion on the record here with respect to the extension or non-extension of the date in that contract and I would like to go back over that and just touch very briefly on it.

In our contract with Western Pipe Lines, which we executed in 1951 -- incidentally, we filed an application in 1952 with the Federal Power Commission to import that gas we proposed buying from Western Pipe Lines and that application was subsequently dismissed because Western Pipe Lines were not prepared to go forward. In that original contract with Western, there was no date set with respect to any termination or right of termination in the contract. When we re-negotiated a contract with Trans-Canada in the fall of 1954 the clauses

which I read this morning were included in this contract, the dates we were quite reluctant to agree to because we knew that in our appearances before the Federal Power Commission it was not realistically considered that the contract was signed in September, that an application was going to be filed in October and that we could possibly have an order issued by the Commission before December 31, 1954. We only agreed to the December 31, 1954 date because the Trans-Canada people told us, correctly, that their permits from Alberta and from Ottawa both had the December 31, 1954 date in there and they did not want to leave any impression in Canada that they were not moving forward as vigorously and as fast as they could with respect to perfecting their project.

When the Federal Power Commission finally set a date for a hearing on the application by Trans-Canada Gas, the date was fixed as a day in January, 1955. Obviously, that meant that the December 31, 1954 date whereby either party might terminate, under certain circumstances, was not only unrealistic but completely inaccurate.

Therefore, on December 13, as shown in Schedule B, Mr. Tanner signed and sent to me a form of contract, a form of letter agreement by which the right to cancel the date by which either party might cancel was extended to April 30, 1955.

I called Mr. Tanner on the phone and told him that it was completely unrealistic, again, because if the hearings only started in January we obviously were not going to get any kind of Order of the Federal Power Commission by April 30, 1955, and again we were advised that the dates in the permits that Trans-Canada had in Canada had been extended to the April 30, 1955 date and that they just felt they could not go any farther than that.

On December 30, 1954, I wrote to Mr. Tanner that, in respect to this April 30, 1955 date -- I would be glad to read the letter. It is not very long.

Q. All right.

MR. MERRIAM: It is a letter dated December 30, 1954, addressed to "Dear Eldon".

"In accordance with our telephone "conversation, I am pleased to attach a copy "of the suggested amendment to the September "16, 1954 contract between our companies.

"I hope that the paragraphs we have "added are acceptable to your company. It "seems to us that they are reasonable for both "parties and will put us in a much better "position before the Federal Power Commission.

"Not having any Trans-Canada Pipe "Line Limited stationery, I used Northern

"Natural Gas Company stationery for the sug-
"gested form of agreement, which I trust is
"satisfactory.

"If this is in satisfactory form we "would appreciate it if you would sign one copy "and return it to me for our files."

If I may read the attachment also, which is a half a page document, which was attached to it; it is a letter from Northern Natural Gas Company to Trans-Canada, addressed to "Dear Mr. Tanner".

"With reference to the agreement dated "September 16, 1954 between Trans-Canada "Pipe Lines Limited and Northern Natural Gas "Company, this is to evidence our agreement "to amend said agreement by extending the "dates set forth in paragraph 20 thereof "from December 31, 1954 to April 30, 1955.

"Trans-Canada agrees that if Northern "is delayed in securing the necessary permits "and authorizations referred to in said para-"graph 20, by reason of Trans-Canada's delay "in supplying essential data, Trans-Canada "will not exercise its right under said para-"graph 20 to terminate the agreement after "April 30, 1955 for such reasonable period of "time as may be appropriate under the circum-"stances.

"Northern agrees that if Trans-Canada is

"delayed in securing the necessary permits "and authorizations referred to in said para- "graph 20 by reason of Northern's delay in "securing its permits and authorizations, "Northern will not exercise its right to ter- "minate the agreement after April 30, 1955 for "such reasonable period of time as may be "appropriate under the circumstances.

"Except for the above amendment, said "agreement dated September 16, 1954 is and "shall remain in full force and effect as "written.

"If the foregoing correctly reflects "your understanding of our agreement, please "signify your agreement and approval by signing "the copy of this letter at the place designated "below and returning same to us."

This agreement was not executed by either party but it was the basis of further telephonic conversations with Mr. Tanner, in which he objected to the language in the second paragraph that relates to delay in the supply of essential data.

We, therefore, when we went to Washington for a hearing in January, changed some of the language in that second paragraph so that it read:

"Delay in completing necessary agree- "ments and arrangements and obtaining neces- "sary permits."

That was a minor change to meet their point in respect of not being obliged to give all the information to the Federal Power Commission that the Federal Power Commission might wish. This form of revised agreement was discussed in Washington with Mr. Tanner. The Trans-Canada people came down to Washington the week end before they were scheduled to go on the stand in our Federal Power Commission hearing. We spent most of the week end going over with their witnesses the status of the various Trans-Canada gas purchasing contracts, financing and other matters.

On January 23rd, which was the last day of our discussion before the Trans-Canada people went on the stand, at the end of our discussion Mr. Tanner and Mr. Justice Wolf, our Washington counsel, and I discussed again our proposal with respect to the amendment of the contract as compared with the December 13th suggested amendment. We pointed out again that it was obviously completely inequitable and unfair that Trans-Canada be in a position to cancel its contract with Northern merely because Northern had not secured a permit from the Federal Power Commission, that our inability to secure such a permit was, in large measure, based upon Trans-Canada's not having completed its various projects, gas purchasing contracts, Alberta trunk line, financing and all the

other things involved, to the point where we might expect to get a permit from the Federal Power Commission.

We also said that, so far as Northern was concerned we felt it was equally inequitable for Northern to be in a position whereby it would take advantage of its own default that might possibly occur in the future if it, in turn, prevented Trans-Canada from obtaining Canadian permits through some default or failure on our part. This was discussed at some length.

During the course of the discussion Mr. Tanner again raised the point that Mr. Coates was in Ottawa at that very moment trying to work out some financing that would have Government support and that anything of this nature at all might be misunderstood in Ottawa as some backing up by Trans-Canada on its proposal to move forward.

He said they just could not sign this kind of document and put it in the record at this point.

On the other hand, I had not executed the December 13th letter at that time. I said I didn't see how Northern could execute the April 30th date when we were appearing before the Federal Power Commission, where it was obvious, as we moved forward in the hearing, that Trans-Canada might very well have the opportunity to cancel its contract with Northern before the

hearing was even completed.

What we finally agreed to with Mr. Tanner, as far as he was concerned as president of Trans-Canada, was that he would agree with Northern in the language of the December 30th letter which I read into the record, but that he could not formally execute such an agreement.

On that basis I signed the December 13th letter, which is dated as of December 27, 1954, and that letter went into the record.

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In respect to the agreement with Mr. Tanner, as representative of Trans-Canada, Mr. Justin Wolf participated fully in the discussion, as we testify here, and Mr. Dale TeKolste, who is in this room, was there for Northern Natural Gas but did not participate in the discussion but sat through the entire discussion and is prepared to be sworn and testify here, if it is necessary, in respect to that action.

Q. I do not think it is, Mr. Merriam, because the way I look at it is this: you may have every reason in the world to feel that somebody sold you down the river, but I think you, probably, have been advised that when April 30 came and passed and that was all there was in writing, Trans-Canada had a legal right to serve the notice that they did, in fact, serve on June 3rd. You may have some cause of action arising out of what was done; that is another thing. But so far as this Commission is concerned, we are not a court of law. We have heard what you have to say about these things. What we are interested in is what should be the policy in Canada as to permitting to exporting of gas, or if any regulations should be required as to price at the border, and what you have told us here today certainly is of relevance to that. But I think that is as far as I care to pursue it.

MR. MERRIAM: We are thoroughly in accord with that, and I would like to make clear, again, that the only reason that this was raised here is because of your question. We did not include it in our submission and did not propose to raise before this body whether or not we have a contract with Trans-Canada, whether they did us wrong, or whether they did or did not write to counsel. We just wanted to get this record straight because there is on this record other facts than the facts I have just stated now.

Q. That is why I asked you the question I did, but I do not think I wish to pursue it any further.

On page 10 in your brief you mention an agreement relating to Savanna Creek reserves with Westcoast and you state: " ... when the volumes available to Westcoast from sources in southern Alberta ..."

Now, is it defined any more than that?

MR. MERRIAM: Yes, it is a point about midway between Calgary and Edmonton.

Q. "... total 300 million cubic feet per day ...", and when you use the words "when the volumes available to Westcoast" do you mean that they have under contract and obtaining that amount of gas?

MR. MERRIAM: Basically, yes.

Q. Then you are in a position to purchase the next 200 million cubic feet per day?

MR. MERRIAM: It is an option that is good for 5 years.

Q. What did you contemplate doing with that gas if you are able to exercise the option?

MR. MERRIAM: As you may know, we, through our interest in Savanna Creek, initially filed an application with the Alberta Conservation Board for a permit to export 300 million cubic feet of gas per day from Alberta with the Savanna Creek gas forming the nucleus to take that gas directly south to the Montana/Alberta and construct a pipeline across the northern part of Montana and Dakota and then tie it into our pipeline in the Twin Cities area. We still think that is a sound project for Northern Natural to construct and we would, perhaps, at some time in the future apply for such an export permit in addition to such gas, if any, that is made available to us through Trans-Canada.

What we had in mind here was that our gas supply position is excellent at this time, and if there was additional gas available over and above the other export requirements, we would expect to go back and apply for an export project of our own.

Q. Is your company in any way associated with Mr. Kayser's company?

[illegible]

[illegible]

[illegible]

[illegible]

MR. MERRIAM: It is not. By associated, you mean ownership-wise?

Q. Yes.

MR. MERRIAM: In the Permian Basin in Mexico and West Texas, we lease facilities from them and transport gas for them, but there is no corporate relationship.

MR. PATTILLO: All right, Mr. Frawley.

BY MR. FRAWLEY:

Q. Mr. Merriam, I am going to avail myself of the fact that you, who are undoubtedly an important figure in the United States natural gas industry, are here today, and to get your views on some problems that are troubling me.

First of all, you are producing some gas in Alberta.

MR. MERRIAM: We have producing gas wells. There is no gas, actually, being produced for market.

Q. They had to be capped because there is no market?

MR. MERRIAM: That is right.

Q. How much potential would you have, just in approximate figures?

MR. MERRIAM: In Savanna Creek alone we have a 34 per cent interest and the proven reserves are talked of as something in the nature of 250

billion cubic feet, probable and possible. The reserves are talked of as 2 trillion feet of gas in total. We also have some small amount of gas in the Pembina reserves where we have an oil production.

Q. Your production at the moment is largely Savanna Creek and Pembina?

MR. MERRIAN: Presently, yes.

Q. Have you ever seriously considered using Trans-Canada as a common carrier in transporting your own gas down into your system?

MR. MERRIAM: We have not considered them as a common carrier; as we try to think of all possibilities, we have thought of the possibility of their transporting our gas, if it is under contract, to a point of delivery to us, yes, but we have not discussed that with them.

Q. That is quite a practical thing to do?

MR. MERRIAM: The common carrier is not especially practical in a natural gas pipeline, but transportation of gas for others, under certain limited circumstances, can be entirely practical.

Q. Let me bring to your attention -- and I am sure you know all about it -- that The Consumers' Gas Company bring Louisiana gas to Ontario through the pipeline facilities of Tennessee Gas?

MR. MERRIAM: That is right.

Q. Using Tennessee gas as a common carrier of their gas?

MR. MERRIAM: Not as a common carrier; that is transportation by contract.

Q. All right, it is in the terminology that we differ a little bit. They are a contract carrier rather than a common carrier.

MR. MERRIAM: I think it is a better expression.

Q. That is the language they use for the highway transport industry, but I did not know they use it for the transmission gas industry. If it was pursued at all, you would pursue it along those lines with Trans-Canada, using them as a contract carrier to bring your gas from your fields in Alberta down into your system in the mid-western United States?

MR. MERRIAM: Yes, if it were practical to work out.

Q. How about amounts? Do you think you would have enough production from the Savanna Creek fields to supply gas in the same quantities that you were going to buy from Trans-Canada?

MR. MERRIAM: Well, if there was 2 trillion feet of gas in Savanna Creek in the eventual proven reserves, our third of that would be something fairly close to the figure that was talked about with Trans-Canada originally. We only have

a one-third and it is committed, at the present time, to Westcoast Transmission.

Q. I knew that, but I was assuming it would be possible to come to some arrangement with Westcoast. In view of your commitments, in a sense you do not have any gas at all to transport to your own system?

MR. MERRIAM: That is right.

Q. But if that contract could be re-negotiated, or virtually breached, by common consent, do you think you would almost have as much gas or, perhaps, more gas than you originally had when you entered into the contract with Mr. Tanner?

MR. MERRIAM: One-third of 2 trillion is something less than a trillion -- more than a half. But there is something else: if we go over to Grand Forks, as we propose to do in 1958, build a 90-mile extension, it could mean something like 50 million feet a day. So far as our own volume of gas in Savanna Creek, if it were not committed ---

Q. Did you develop the Savanna Creek field as a leaseholder, or did you go in and buy an existing leaseholder out?

MR. MERRIAM: We acquired an interest in the leaseholds along with Husky Oil and Gas Company and later on Phillips Petroleum Company was brought in, and we each have, roughly, a third

interest in the leaseholds with one or two minor additional partners.

Q. I asked that question to learn the serious extent to which you were interested in developing Alberta gasfields. Have you taken any Crown land or leases from a leaseholder?

MR. MERRIAM: If you are getting into the technicalities, let me turn it over to Mr. Barton.

MR. BARTON: We have taken leases throughout Southern Alberta over the past 5 years. Those leases are located in Savanna Creek, in Pembina and in the Western Ho field. We have some large concentrations in Southern Alberta. We have a concentration southeast of the Turner Valley field, and one northeast of the Turner Valley field.

Q. In other words, you are in Alberta seriously seeking natural gas?

MR. BARTON: Yes, sir.

Q. And you have a large distribution system in the United States, and all I am suggesting is, why you did not marry those two things?

MR. MERRIAM: I might add that we have four wells built in Savanna Creek at $1 million apiece and our 32 per cent runs up into a substantial figure.

Q. That indicates the seriousness of your intent.

MR. MERRIAM: That was the intent of

my answer.

Q. It could not be anything but pleasing to me.

MR. MERRIAM: I think, eventually, we will tie the two systems together. We think it would be an economic advantage and would produce an orderly process of developing of the Canadian reserves and our markets.

Q. Down in the United States, does Northern Natural Gas mostly produce or mostly purchase?

MR. MERRIAM: Mostly purchase. We have 1.9 trillion of our own reserves of a 12 million total proven reserves.

Q. What you might call the selling arm of your business of Northern Natural is Peoples Natural Gas Division?

MR. MERRIAM: That is the retail division.

Q. That is, when you sell to the ultimate consumer?

MR. MERRIAM: That is correct.

Q. You also sell to utilities that, in turn, sell to the ultimate consumer?

MR. MERRIAM: The bulk of our sales are to utility companies that sell to the consumer.

Q. The bulk of your business is the gas that you sell to utilities. I also want to ask you if you had any experience in this sort of thing: do you have communities that are very closely --

practically adjacent to some of your fields, which communities take the position that they should get a better price, that they should pay less for the gas than your customers that are at the end, say, of your longest line and, if so, how do you treat those circumstances?

MR. MERRIAM: In Southwest Kansas in the Hugoton field there are 15 or 16 communities where we have both distribution system and a gathering system, and the pipeline serving them started as a separate independent company and they do have lower wholesale town border rates than do the other areas. Now, of course, our system is all zoned. That area is one zone so far as the wholesale zone price is concerned.

Q. Who makes the zones?

MR. MERRIAM: The Federal Power Commission makes the decision.

Q. Does the Federal Power Commission apply a zone that is completely within the borders of a State?

MR. MERRIAM: They have not used State lines primarily; they have used mostly a distance formula.

Q. But the Federal Power Commission asserts the right to impose price zones throughout the territory which you serve?

MR. MERRIAM: Yes, wherever gas moves

in interstate commerce. In the particular situation I referred to, there was a little bit of confusion as to jurisdiction, because the towns are all within the State of Kansas and our gas supply is all within the State of Kansas, but the wells that deliver gas to the Kansas communities also move gas for interstate commerce. So far as the Federal Power Commission is concerned, it has taken jurisdiction over the wholesale town border price.

Q. So far as the Federal Power Commission is concerned it has taken jurisdiction over the wholesale town border price.

Mr. Merriam, you mean where you are down in the Hugoton field, where you have a field where the consumer is within the borders of the State of Kansas, the utilities there have sought to have you give them a depressed price under what you would sell in interstate commerce?

MR. MERRIAM: It is not related to the production of gas from the wellhead; it is related to the lower capacity lines involved in the branch lines serving communities, regardless of the prices paid in the fields, regardless of whether the gas is to go to local sources or for export out of the State.

Q. Does the Kansas regulatory commission have anything to say with regard to the price which you pay in the field?

MR. MERRIAM: They did have until about a month ago. The Kansas Corporation Commission established a minimum price for gas in the Kansas portion of the Huguton field. That minimum price regulation was knocked out recently by the United States Supreme Court.

Q. I would like to get into the record just what are the facts there, because I think some time later, considerably later, it might be useful in certain representations that I might want to make to the Commission.

I am calling your attention to the fact that, as reported in the "New York Times" of Tuesday, January 21st last, there was a case involving the Cities Service Gas Company and the Kansas State Corporation Commission that came before the United States Supreme Court and, apparently, from this newspaper report, the Court disposed of the case in what the newspaper calls a one paragraph unsigned order on the 20th of January, 1958, in which judgment the Supreme Court cited two earlier natural gas decisions. Those two earlier natural gas decisions were Phillips Petroleum Company versus Wisconsin, which, I take it, was probably the case referred to in your brief -- I didn't make any note

of that, but I would like to find it.

MR. MERRIAM: I am advised that is correct.

MR. CHAMBERS: Page 13.

MR. FRAWLEY: Q. You refer to Phillips versus Wisconsin, 347 U.S., 672, and that is the case that the Supreme Court referred to in the Cities Service case?

MR. MERRIAM: Yes.

Q. The other case they referred to was the Ponoma case, and I think that is spelled P-o-n-o-m-a, and that case is not further referred to.

MR. MERRIAM: That is a similar Oklahoma case, similar to the Kansas case.

Q. Yes, similar to the Kansas case and similar to the Phillips case?

MR. MERRIAN: Well, it would be safer if you compared it to the Kansas case.

Q. What I want to get is the end result, because apparently the effect of the Phillips case which is referred to and which, apparently, was adopted as the reasoning behind the case on January 20th, the Cities Service case, was that the Federal Power Commission has a right to regulate the maximum field price for sales that move into interstate commerce.

Now, is that what the Federal Power Commission asserts, the right to regulate gas purchase contracts, so long as the gas covered moves

in interstate commerce?

MR. MERRIAM: Well, let me start back a step further. The Natural Gas Act was passed by Congress in 1938. From the time it was passed until the Phillips decision, which was several years ago, the Federal Power Commission had taken literally the language of the Natural Gas Act, which said that the Federal Power Commission did not have jurisdiction over production.

In the Phillips case, the United States Supreme Court overruled the Federal Power Commission in that respect and said, "Yes, you do have jurisdiction, under the Natural Gas Act, referring to gas that is moving in interstate commerce," and when gas leaves the well, in the Phillips case, which was an outlet to a gasoline processing plant, the natural gas starts moving into interstate commerce and then the Federal Power Commission has jurisdiction.

The Federal Power Commission was not in agreement and still is not in agreement. It feels that it makes no sense that the Federal Power Commission, nationally, should regulate the price of gas from the wellhead.

In spite of that, there have been some several attempted amendments to the Natural Gas Act to clarify that situation since that time and each time, for one reason or another, they have failed,

either failed passage or have been vetoed by the President.

There is still pending another attempt to amend the Natural Gas Act to put it back to where everybody thought it was before the Supreme Court ruled in the Phillips case.

The second case you referred to was the Oklahoma case, where they had, in Oklahoma, a minimum price that was established by the Oklahoma commission and supported by the Oklahoma State Supreme Court. That was a delivery, again, not at the wellhead but at some point in the processing which, at the moment, escapes me.

The United States Supreme Court, in passing on that case, merely applied the Phillips case to the Oklahoma case and said that because gas is moving in interstate commerce the Federal Power Commission has jurisdiction, that the State has to leave the matter of interstate commerce to the Federal Power Commission with respect to the Natural Gas Act.

Then, when they came to the Kansas decision, that was a field, not a wellhead case, and the producers in that case were trying to distinguish between the wellhead sale of the gas and one which was at some later stage, so the Supreme Court said it doesn't make any difference, in fact, whether it is wellhead or some other stage, the Oklahoma case

applies there.

Q. I am much obliged to you, Mr. Merriam, for the very clear statement, if I may say so, which you have given us.

Since the 20th of January, when the Supreme Court made its latest pronouncement, has the Federal Power Commission attempted to regulate the wellhead price?

MR. MERRIAM: Let me go back a little further, again. After the Phillips decision was confirmed, the Federal Power Commission issued an order requiring all the producers who move gas in interstate commerce to file their gas sale contracts with the Federal Power Commission as tariffs and, with minor exceptions, that was done, and the Federal Power Commission accepted those contracts as the filed tariff which they approved, subject to this, that at any time they wanted to change it later, they could.

Where there were State minimum price laws, the Federal Power Commission permitted the producers to file a sheet of paper which said that while the contract may be 8 cents, the minimum price provision is 11 cents, and you then collected the 11 cents, and the Federal Power Commission permitted that sheet of paper to go in effect as a tariff rate that the producers were entitled to charge the pipeline companies.

Now, since the Kansas decision, which, apparently, settled this thing with some finality -- although it has, I understand, been appealed -- the Federal Power Commission has not, so far as I have been advised, yet applied the Kansas minimum price action to the contracts of the producers on file for the sale of gas under Federal Power Commission jurisdiction. Nobody knows what they are going to do.

Q. And that is the situation as it is there?

MR. MERRIAM: That is today.

Q. Now, coming to your own views about it, you do not favour the Federal Power Commission having anything to do with fixing the wellhead price?

MR. MERRIAM: Nor does the Federal Power Commission think they should. They think it is completely unworkable.

Q. Do you think any State regulatory commission should have anything to do with fixing the wellhead price?

MR. MERRIAM: Well, I am a free competition man, myself. I think you are more apt to get a fair price for gas at the wellhead or near there when you allow the forces of competition to take play in the fixing of price.

Q. Precisely. I put it to you, Mr.

Merriam, that neither Federal agency nor a provincial or State agency should have anything at all to do with fixing wellhead prices and it should be left to bargaining between buyer and seller.

MR. MERRIAM: I might add we took the Kansas Commission right to the Supreme Court on that very point.

Q. Do you agree with what I have just put to you as to what should be the proper situation?

MR. MERRIAM: Yes.

Q. Leave it entirely to bargaining between the parties?

MR. MERRIAM: Yes.

THE ACTING CHAIRMAN: Mr. Frawley, we have problems to settle up in Canada, besides settling the problems of the United States, at the same time.

MR. FRAWLEY: I am looking for some good precedents, because I don't want to ask this witness about his opinion of Canada.

Thank you very much.

THE ACTING CHAIRMAN: Mr. Merriam, I will relieve you from your oath now, you and your colleagues, but I will ask you a few questions and you are not under oath now.

When Trans-Canada stopped playing ball with you, do you remember it happened at the same time that they got that steel, at the time delivery

was guaranteed by Tennessee Gas? Do you know about that deal in steel?

MR. MERRIAM: I know what I have read. Other than that, I don't have any information.

I do know -- and all I can talk about is from my own knowledge -- that on May 12th and 13th, which was the date when we first heard of the Trans-Canada-Tennessee negotiations having been as far along as they were, that is the first we heard about it. I don't know when the steel arrangement was made.

THE ACTING CHAIRMAN: Now, before we quit, could you tell us why Trans-Canada let you down, what happened? What do you suggest, with the pipeline going down to a certain point? I don't think you have a very good connection with them; you have one going out west, to the west coast, and you have the other one ---

MR. MERRIAM: I repeat, we did not come here to cry over spilt milk. We have lost contracts before and we will do so again.

THE ACTING CHAIRMAN: This is just for our own benefit, to get information and an impression, that is all.

MR. MERRIAM: We, frankly, have not been able to figure out why. The only reason Trans-Canada gave us, when I talked to Tanner and Milner, was that Tennessee had a package deal, that the

package deal included the sale of gas by Tennessee to Trans-Canada at Niagara, and the purchase back at Niagara by Tennessee from Trans-Canada, and that that was wrapped up in a bundle which was conditional upon the consumer sale being coupled with it.

That is the only explanation I heard.

THE ACTING CHAIRMAN: So what do you suggest for the future, to get your gas? Where are you going to get it?

MR. MERRIAM: Well, when we started out in 1950, our first negotiations with Canadian Gulf to buy the Pincher Creek gas to take across the border and build our own line, our pipeline capacity was about 500 million to 600 million feet a day, 1 billion 200 million feet capacity, our gas reserves at the time were 6 trillion cubic feet of proven gas reserves. They are now 12 trillion cubic feet of proven gas reserves.

What I am saying is that we have kept in business and propose to keep in business and find gas where there are people willing to sell it to us at a price and on terms within which we can buy it. We have said, in the Federal Power Commission record, and I have said to Mr. Coates in his office in Toronto that whenever Trans-Canada is free to sell us gas at the border we are willing

to sit down with them and talk about buying it from them.

We say that to anybody else in Canada who has gas for sale, that we are willing to talk with them and fit it in with our markets, which have by no means been satiated, by a long shot, as far as its ultimate capacity is concerned.

This may not be appropriate, but the thing we have been trying to say to Trans-Canada is that if the Federal Power Commission will be the ones in the United States who will determine who can import Canadian gas to the extent that the Canadians choose to make that available for export from Canada, the Federal Power Commission will decide who will build the facilities and all the other matters related to it, including markets.

We have stated to the Trans-Canada, "We think you should keep yourself clear so that if the Federal Power Commission should decide that Northern Natural Gas Company or somebody else is the proper market in the United States for such Canadian gas as is available, that and the Canadian permits, you should keep yourselves open and free so that you are not precluded from dealing with others if your Mid-Western-Tennessee proposal falls by the wayside."

THE ACTING CHAIRMAN: I think that is all, Mr. Pattillo, unless you have something else.

MR. PATTILLO: That is all, thank you, Mr. Chairman.

MR. COMMISSIONER HOWLAND: One question, please. You have been very generous with advice, Mr. Merriam.

MR. MERRIAM: I hope I have not been too generous.

MR. COMMISSIONER HOWLAND: No, but I would like to get something from you on the matter of interruptible gas. Now, I am a novice even at the term but in the Trans-Canada brief to us the volume of interruptible gas was very high, about one-third of their total. Does this run as high with you?

MR. MERRIAM: In our case about half of our total annual volume is the so-called interruptible industrial sales. If you have that last annual report of ours before you, there is a chart which I think would be helpful in understanding the picture. It is on page 9. At least so far as our own company is concerned our gas sales to residential and other small volume users, you will note in the summer time that gets down as low as 200 million cubic feet per day whereas our capacity is 1 billion 200 million cubic feet per day. And then looking at the uncoloured lines above, our capacity at the top, we could have sold almost 2 billion cubic feet a day of resales if we had not curtailed our industrial interruptible customers. Now, the

pipeline capacity is not built for interruptible sales, it is built for so-called firm sales which are largely house heating and commercial heating where they pay a firm higher price for gas. That is estimating a 25 per cent load factor in our territory. If we sold any other gas that would mean our pipeline would be basically empty 75 per cent of the time. Therefore, we can sell off-peak industrial gas on an out-of-pocket cost basis, we get in the cost of gas in the field and to take care of the compressor built to get it to market at a profit which would reduce the price which consumers would otherwise have to pay for gas.

MR. COMMISSIONER HOWLAND: Are there any regulations from the Federal Power Commission regarding the placing of these off-peak loads? I do not want a technical answer, I want to know whether there has been a special consideration given this by the Federal Power Commission?

MR. MERRIAM: The Federal Power Commission, so far as the sales for resale are concerned, has complete jurisdiction over the interruptible sales under the provisions of the Natural Gas Act but they technically do not have jurisdiction over the price charged for interruptible sales when they are made directly to the consumer and not for resale to a utility who then turn around and resell it.

MR. COMMISSIONER HOWLAND: The direct sale is your company or the pipe line company to an industry?

MR. MERRIAM: That is right, and we have a number of those situations. Technically they do not have jurisdiction over it but practically on the allocation of costs as firm and interruptible gas they do exercise a very considerable amount of control.

As our coal friend sitting in the audience knows, the coal interests in the United States try to keep the allocation of costs as high as possible for the interruptible sales of gas in order to discourage that use which is a very large user of coal.

MR. COMMISSIONER HOWLAND: Well, we have a little coal in Canada. I was not getting over to that, I was trying to understand the allocation of cost between the interruptible and the non-interruptible industrial from the point of view of the best realization of your natural resources in terms of gas. It is low priced gas to fill up a pipe and in my ignorance I was asking the question why you did that. I can understand now from your point of view.

MR. MERRIAM: Yes, the ultimate consumer in our case might have to pay 50 per cent or 100 per cent more for gas than he would otherwise have to pay.

THE ACTING CHAIRMAN: Mr. Chambers?

MR. CHAMBERS: No, thank you, Mr. Chairman.

THE ACTING CHAIRMAN: Mr. Pattillo?

MR. PATTILLO: Nothing further, thank you, Mr. Chairman.

THE ACTING CHAIRMAN: Mr. Frawley?

MR. FRAWLEY: Nothing, thank you, Mr. Chairman.

MR. MERRIAM: I wish to thank you for the opportunity of letting us come and talk to you and I trust we have not taken too much of your time.

THE ACTING CHAIRMAN: We thank you very much. I have your balance sheet here and I have not had an opportunity to look at it but I do see a very nice figure here. We will break now for ten minutes.

MR. PATTILLO: After the break I suggest that we take up the submission of the Bailey Selburn Oil and Gas Company Limited and other companies who are independent producers.

---A short recess.

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THE ACTING CHAIRMAN: Mr. Pattillo, Mr. Chambers has something to say.

MR. CHAMBERS: Mr. Chairman, I regret the oversight before we rose, but I have been authorized to inform the Commission on behalf of Northern that if there are any other witnesses or any other information which you feel may be of use, will you call on us and we will be glad to comply?

THE ACTING CHAIRMAN: Thank you very much, Mr. Chambers.

MR. FRAWLEY: Mr. Chairman, before Mr. Pattillo begins, I would like to do something I have been forgetting to do all day. The solicitor for the Oil and Gas Conservation Board is engaged with the Board at a hearing in the City, and he asked me to put into the record the supplement to the submission of the Oil and Gas Conservation Board made earlier in the proceedings. You will recall, Mr. Chairman, that there were certain matters they were asked to prepare, and they have done so and put them into a booklet, and the booklet has been in the hands of the Commission and its staff for some days. At the moment I would merely like to introduce it into the record and give it an exhibit number.

---EXHIBIT NO. C-27-3 Supplement to submission of Oil and Gas Conservation Board of Alberta.

MR. PATTILLO: Mr. Chairman, we have the submission of a group of independent producers, which I am suggesting be marked as Exhibit C-27-4. You will observe that the submission not only deals with the natural gas problem, but also deals with oil and deals with the matter of taxation. I have asked Mr. Bailey, as one of the members of the group, to confine the submission today to the introduction of the natural gas problem and the conclusions they have drawn that relate solely to natural gas, and I have suggested to him that we would have the group return before us when we come back at the end of April, and we will be dealing with oil; to come back on that occasion and give the rest of the brief.

---EXHIBIT NO. C-27-4: Submission of Amurex Oil Co.; Bailey Selburn Oil & Gas Ltd.; Banff Oil Ltd.; Canadian Export Gas Ltd.; Canadian Husky Oil Ltd.; Canadian Superior Oil of California, Ltd.; Dome Exploration (Western) Limited; Great Plains Development Company of Canada, Ltd.; Medallion Petroleums Limited.

Submission of

AMUREX OIL CO., BAILEY SELBURN OIL & GAS LTD., BANFF OIL LTD., CANADIAN EXPORT GAS LTD., CANADIAN HUSKY OIL LTD., CANADIAN SUPERIOR OIL OF CALIFORNIA, LTD., DOME EXPLORATION (WESTERN) LIMITED, GREAT PLAINS DEVELOPMENT COMPANY OF CANADA, LTD., MEDALLION PETROLEUMS LIMITED

APPEARANCES:

Mr. Vernon Van Sant, Jr.	-	Executive Vice-President, Amurex Oil Company.
Mr. A.G. Bailey	-	Vice-President & General Manager, Bailey Selburn Oil & Gas Ltd.
Mr. W.H. Hohag, Jr.	-	President & General Manager, Banff Oil Ltd.
Mr. A.F. Beck	-	President, Canadian Export Gas Ltd.
Mr. W.E. Powell	-	Vice-President, Exploration and Production, Canadian Husky Oil Ltd.
Mr. A.E. Feldmeyer	-	President, Canadian Superior Oil of California, Ltd.
Mr. N.W. Nichols	-	Executive Vice-President, Great Plains Development Company of Canada Ltd.
Mr. E.A. Galvin	-	General Manager, Medallion Petroleums Limited.

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MR. PATTILLO: Mr. Bailey, I wonder if you would be kind enough to introduce to the Commission the group you have with you today, stating the name of the person and the company he represents?

MR. BAILEY: Yes, sir.

Mr. Chairman, I would like to introduce, first of all, Mr. Vernon Van Sant, Jr., executive vice-president of Amurex Oil Company.

Mr. W.H. Hohag, Jr., president and general manager of Banff Oil Limited.

Mr. A.F. Beck, president of Canadian Export Gas Limited.

Mr. W.E. Powell, vice-president, exploration and production, Canadian Husky Oil Limited.

Mr. A.E. Feldmeyer, president of Canadian Superior Oil of California Limited.

Mr. J.P. Gallagher, president and general manager of Dome Exploration (Western) Limited, who is unable to be with us today.

Mr. N.W. Nichols, executive vice-president, Great Plains Development Company of Canada Limited.

Mr. E.A. Galvin, general manager, Medallion Petroleums Limited.

My name is A.G. Bailey, and I am vice-president and general manager of Bailey Selburn Oil and Gas Limited.

THE CHAIRMAN: You may now proceed, Mr.

Bailey.

MR. BAILEY: Mr. Chairman, I appear before you today as the spokesman for a group of independent producers, all of whom are members of the Canadian Petroleum Association and all of whom support the brief submitted by the Association.

We feel that independent producers, as such, have certain problems and points of view (which were not dealt with in the Canadian Petroleum Association brief) and which will be of interest to the Commission.

For the purposes of this submission, an independent producer is one which is of minor significance in the total world industry. Though it might even carry on an integrated operation from oilfield to gasoline pump, it is engaged in the exploration for, and development of, oil and gas reserves, and this is the distinguishing difference, the independent depends upon the oil and gas resources of Canada for its income. This is, of course, in contrast to the companies with operations or affiliations which are international in scope.

An international company, if it finds production restricted in one country, can draw more heavily from resources located elsewhere. We cannot do that.

If reserves in one area or country appear insecure for political or military reasons, an

international company can produce its reserves faster in the area which is insecure, and retain its reserves in areas which appear safer. We cannot do that.

Since our area of interest is here in Canada, we are more directly influenced by whatever policies are in effect in Canada. Our economic and political interests are more closely identified with those of the provinces and the nation in which we do business. For this reason we feel that the views of the independent producers are of unique importance to the Commission.

We propose to discuss some of the problems of the oil and gas industry which are of urgent concern to the public and to the government of Canada, and particularly of Western Canada. We will discuss the part played by the independent producers, and will make recommendations under three different headings.

Today, however, we will deal only with natural gas.

As independent producers, we make decisions of a long term nature, but they must often be governed by short-term business considerations. For example, the decision to drill a well may involve us in obligations to drill many additional wells. The decision can only be justified on the assumption that our capital will be returned in a

reasonable time and that the production thereafter will be fast enough and continue long enough to result in a satisfactory overall profit. In the gas industry, we may sign contracts which commit our reserves for 25 years ahead, but until these contracts result in gas sales, we derive no revenue toward the repayment of our capital cost.

In exploration, we do everything possible to spread our risks. Still, this can be done adequately only when capital is sufficient to maintain an active exploration program over an extended period of time. The law of averages is the application of large numbers. The resources of an international company permit it to conduct a program of the size and duration which almost guarantees results. The independents, taken as a group, can do the same thing. But for any one independent company, the law of averages is no assurance of success.

The search for oil and gas is a highly uncertain business, in which neither a major company nor an independent can be sure what lies beneath the ground. Oil and gas are where you find them, and all of us, major or independent, have a chance at success, even though the odds favour those with the greater resources.

Although he may share with the majors the risks of exploration, an independent producer must conduct himself differently. He endeavours to build

a foundation of producing assets which, while they are depleting, will return his capital within a few years and allow him sufficient funds to remain active in exploration. For any independent, each venture is of great importance. He cannot exist for long periods without revenue from production.

In addition to the normal risks in our business, there are outside uncertainties more difficult to deal with. For instance, changes in policies, or the actions of foreign governments are often unpredictable. The closing of the Suez Canal conferred a very temporary benefit on producers in Canada. The imposition of oil import quotas by the United States could have the opposite effect. When faced with such abrupt changes, an international company can adapt itself more easily than we can.

We do not for a moment suggest that the independent producer is seeking special considerations. We simply wish to leave the Commission with the impression that we are different. While we share with the major companies many of the same risks and uncertainties, we operate in many ways at a disadvantage. The disadvantages are further increased by some shortcomings in the Canadian capital market and in taxation policy because these bear more heavily upon the Canadian independent producers than upon international companies operating here. We will have some suggestions to make on this subject later

in our brief.

In spite of certain handicaps, the independent producers have played a leading role in the search for oil and gas in Western Canada. We have not been able to prepare accurate figures for the amount of money spent on preliminary exploration, in which the major companies have been more active than the independents, nor for expenditures on drilling. We have prepared a table showing the number of wildcat wells drilled in each of the Prairie Provinces in each year from 1949 to 1957. Every wildcat well, whether successful or not, provides valuable information for the industry at large. The table which follows will give the Commission a measure of the activity of the independents, and their contribution to developing the oil and gas resources of Canada.

(See next page for table)

NUMBER OF WILDCAT WELLS

DRILLED BY MAJOR AND INDEPENDENT COMPANIES

PRAIRIE PROVINCES 1949 - 1957

	ALBERTA		SASKATCHEWAN		MANITOBA		TOTAL	
	Major	Independent	Major	Independent	Major	Independent	Major	Independent
1949	90	110	3	11	0	3	93	124
1950	83	133	15	25	1	3	99	161
1951	127	212	25	36	7	2	159	250
1952	129	283	142	70	23	13	294	366
1953	128	159	189	63	4	21	321	243
1954	179	156	246	73	11	70	436	299
1955	188	150	231	77	14	43	433	270
1956	223	149	193	131	16	28	432	308
1957	285	163	282	264	#	#	567	427
TOTAL	1432	1515	1326	750	76	183	2834	2448

#Not available.

These figures are derived from data in the yearbooks of The National Oil Scouts and Landmen's Association and are true wildcats, in the sense that extensions of existing fields, or new pay discoveries drilled in such field areas, are not included.

First, the figures show that, from the years 1949 to 1952, inclusive, approximately 60 per cent of the wildcat wells were drilled by independents.

Secondly, in the past nine years, over 45 per cent of the wildcat wells were drilled by independents.

The Commission will note that in the past two years there has been a sharp increase in wildcat drilling by independents in Saskatchewan. This reflects the fact that the economics of oil production in Alberta have been less attractive. Alberta production, as a percentage of the productive capacity of the wells, has declined from 71 per cent in 1954 to 51 per cent in 1957 and to only 45 per cent today. A chart of this relationship forms Appendix 1 of our submission.

The fact that the independents, in the past nine years, have drilled almost half of all the wildcat wells in the Prairie Provinces, makes our point clear. The independents are a dynamic force in the development of Canada's petroleum resources.

The independent companies maintain this activity partly because they are smaller. They need not make recommendations to a distant committee and await approval. Ordinarily, they are more flexible, and probably faster to react to opportunity. Similarly, because their funds are limited, they must have an active policy regarding acreage. They must acquire acreage where it is cheap, in areas not yet explored. They usually test the acreage quickly, or farm it out to others, in order to be free to move on to new areas. These factors create activity which speeds up the whole process of exploration and discovery.

The contribution made by the independents is direct and measurable, as we have shown, as well as indirect in stimulating the activity of others. With this background we will now discuss the natural gas phase of our business.

NATURAL GAS: We would like now to furnish the Commission with some information regarding natural gas.

Our surplus gas is wanted and needed outside of Alberta. In recent weeks, the Commission has heard proposals which bear this out. Such proposals are usually referred to as plans for export, which is an unfortunate word, because it suggests to many people that Canada will be deprived of a valuable resource. This is very far from the

truth. Export simply means movement of surplus gas out of the Province of Alberta, either east or west to other parts of Canada, or south to the United States. In fact, if all the projects announced to date are brought to completion, in the order of 50 per cent of Canadian gas will be moving to markets within Canada.

A great deal of gas has been discovered incidental to the search for oil. Because there were limited markets for most of this gas, there has been little incentive to develop it. The nine independent producers represented here today have, between them, invested over eight and one-half million dollars to drill gas wells which are now capped, and in addition, approximately five and one-half million dollars on acquisition, rentals, and exploration in these areas, an aggregate of 14 million dollars. Furthermore, we must make more expenditures of the same type, tie up more money, in order to prevent some of our leases and permits from expiring. We submit that the total locked-in capital of both the majors and the independents has reached a startling figure. Worse than that, reserves which have been committed under contract can be said to be declining in value when export permits are not issued.

If money can earn six per cent, the present worth of our developed gas in the ground

falls by 8/10ths of a cent per 1,000 cubic feet for every year that production is deferred. During the period that our gas reserves are lying idle, the provinces are deprived of royalty revenue, and many people here in Canada are deprived of gas.

The Government of Alberta is fully justified in ensuring that its people have adequate reserves available for their future use before markets outside the Province can be served. But the amount of the reserves available, surplus to the Provincial needs, can be very much influenced by government policy.

Even though there was little incentive to explore for gas, the proven reserves of Alberta, as measured by the Oil and Gas Conservation Board, have jumped from 4.7 trillion cubic feet in 1950 to 21 trillion cubic feet today.

A policy is hardly realistic which fails to recognize that an incentive to search for gas would lead to large scale exploration and greater gas reserves. In this connection, the Commission may welcome some guidance in the interpretation of the figures for gas reserves.

A consideration of natural gas reserves can be divided into:

(a) An estimate of proved reserves of fields or areas, restricted conservatively to the stage of development drilling which such fields have

reached.

(b) Probable reserves capable of being developed by further drilling in such fields or areas, and

(c) Reserves in areas yet to be discovered.

A number of estimates in the first category have been presented before this Commission and some long term guesstimates for the Province of Alberta have been advanced by the Board and by the Canadian Petroleum Association in the third category. The proved reserves appear consistent and reasonable and show a marked similarity when alloance is made for minor differences in the bases of the estimates. We would like to make some comparisons which illustrate what these figures can mean in the light of the near term drilling, which would follow the incentive provided by the assurance of expanded markets.

Until the authorization of an export permit to Trans-Canada Pipe Lines was granted on May 10, 1954 there was no concrete assurance of any expanded high load factor market for natural gas. In spite of this, the entire initial requirements of Trans-Canada, surplus to provincial needs, had been proved at the time the permit was granted.

Let us look at an example of four fields which are closely associated geographically and geologically. As at December 31, 1951 they were

allotted proved reserves of 128 billion cubic feet (BCF) by the Board -- today the figure is 627 BCF -- nearly five times as large. It is interesting to note that these fields, namely, Kessler, Oyen, Provost and Sibbald, are all contracted for early sale of gas to Trans-Canada. In June, 1953 these fields were classified as beyong economic reach and this, we submit, illustrates the fast changing position of many such discovered reserves.

Let us look at a further example of reserve increases in nine fields, (Beaverhill Lake, Calgary, Carbon, Harmattan-Elkton, Minnehik-Buck Lake, Savanna Creek, Westerose South, Westlock, and Wimborne), in no way linked with the dedicated reserves for Trans-Canada's needs. These nine fields, essentially undeveloped in mid-1955 (four wells or less in any field), were estimated by the Board as at June 30, 1955 to have total disposable reserves of 583 BCF. As at January 1, 1958, only 30 months later, they were estimated to have 3,488 BCF, nearly six times as large. The majority of these fields are as yet not delineated. These nine fields are a reasonable cross-section of areas which include variable quality and character of reserves, difficulty of access, variable depth and difficulty of drilling, and, therefore, variable investment.

In the Board's estimates for January 1, 1958 are included 65 areas, each of which have four wells or less and no market. The recoverable, disposable reserves attributed to such areas are 4,357 BCF or about 20 per cent of all reserves for Alberta. These are estimated on the limited control of a total of 130 wells drilled in the areas, or an average of 2 wells per area.

Within the 65 areas are Foothills discoveries, discoveries in the deeper part of the basin and also discoveries in relatively shallow horizons (Lovett, Sarcee and Waterton in the foothills - Carson Creek, Crossfield, and Parkland in the deeper basin - and Rochester, Countess, Wayne, and Turin as shallow horizon areas), similar in setting and

characteristics to the nine fields whose growth to date has been illustrated.

We emphatically predict that this growth trend will continue and that it is realistic to visualize, in the near future, a several-fold increase in the present estimates of these sixty-five areas, as well as substantial growth in the development of many of the remaining areas included in the Board's estimates. As to new discoveries, we offer one very current illustration in the Panther River well -- in the mountains 63 miles northwest of Calgary -- still drilling and having tested a reported 7.2 million cubic feet per day from a new productive horizon.

A great majority of increases to the present have been accomplished without assurance of a near term market and complementary return on investment. They have been restricted and minimized in an atmosphere which has certainly fallen short of being stimulating and at times has been contradictory. In such an atmosphere of uncertainty, past growth in the aggregate should not be used as a means of realistically estimating the trend of future growth given adequate markets. It is bound to be unrealistically low. The reserve figures compiled by the Board over the years to date, and used in projecting future growth trend, illustrate only the ultra-conservative future growth which will occur in spite of the fact of no assured near term markets.

We further predict that, given the assurance of high load factor markets for gas, presently available reserves, plus additional development of

present areas, plus new discoveries from the amply demonstrated potential of the Western Provinces, will provide the supply being sought for available markets today as well as take care of Canada's needs.

Having stated that surplus reserves existing now and in the near future justify immediate expansion of the area being served by Alberta gas, there remain certain points which we would like to make to reinforce our view and to show that export will serve the public interest.

First, we can now sell our gas, a situation which might not necessarily be true at all times in the future.

Secondly, with healthy competition amongst gas purchasers we can obtain favourable prices for our gas. In the United States, old contracts, without escalator and other clauses in the 1930's, have been expiring. Instead of a field price of 4¢-5¢ per thousand cubic feet which made gas such a cheap fuel in the inflationary decades of the 1940's and early 1950's, new contracts are being written at 15¢-20¢ and 22¢. Costs of construction, exploration and development are rising, so let us be quite clear that the trend of gas prices is upward.

Perhaps the only way in which Canadian domestic consumers can be protected over the long run against some of the impact of rising gas prices, is by participating in an arrangement whereby local and export markets are combined, in such a way that maximum economies of production and transmission are possible. The long-distance purchaser who must buy large volumes on a high load factor renders a

double service. In assisting in financing a wide-spread system, he makes it possible for cities, towns, and hamlets in the gathering area to obtain ready access to gas supplies. Such a gathering system could never be financed if it were dependent on local markets only. In paying at predictable, rising and adequate prices, the long distrance volume consumer lowers the average cost of gas to local users below what it would be if the local markets only were being served.

We have prepared for the Commission an example of the importance of a high load factor in making gas available at low prices. Using actual figures for the City of Lloydminster, we show that the existence of refineries in the area, with their year around use of gas at a high load factor, makes gas cheaper for the residents of Lloydminster than it would be if purchases by the refineries were removed. This example is illustrated in detail and is submitted as Exhibit 1. In summary, the existence of a high load factor throughput permits gas to be delivered at a price of 18.3¢ per thousand. If the pipeline served the City of Lloydminster market only, with its low load factor, the unit price would be about 36¢ per thousand. The present arrangement will save consumers in this relatively small city about $50,000 per year. This situation will prevail to a greater or lesser extent in other areas.

One overriding consideration in favour of gas export is the business recession which we are facing. We have already shown that, if oil markets are not expanded, the independent producers in part-

icular and the industry in general will be forced to curtail oil exploration, and the economy of Western Canada will suffer. Combined with the effect of a decline in general business, the impact could be very serious. On the other hand, markets for gas will help provide the petroleum industry with the revenues it needs to keep on developing the nation's resources. Moreover, gas export will give considerable employment during the pipeline construction period, will keep the pipe mills busy, and will stimulate the whole Canadian economy. When the Government of Canada is operating at a deficit to create employment, surely huge projects like this, financed by private enterprise, should be encouraged.

We want to be clearly and firmly on record in favour of immediate approval of expanded markets for gas. We have shown that gas reserves, when predictable allowance for expected future development and discoveries is made, are, and will be, ample. We have shown that residents of Canada will not suffer, but will benefit from export. Provided the public interest is adequately safeguarded, we see no difficulties in the export of gas. On the contrary, we see gas export and the economic activity that goes with it as a straightforward method of strengthening the Canadian economy in a difficult period. It will provide enduring national benefits as well. We feel that the Provincial and Federal governments should take early and positive action.

Mr. Chairman, I think this might, perhaps, be out of context, but I think I should say our final recommendation with regard to natural gas is that we urge immediate approval of expanded markets for our surplus natural gas with adequate protective measures for the Canadian people. I think that is all with regard to this part, Mr. Chairman.

BY MR. PATTILLO:

Q. Mr. Bailey, I will just ask my questions of the group and you may decide amongst yourselves which one of you will answer.

In consideration of the matter of the reserves, and particularly the comments that you have made as to how the figures have altered so radically when extensive work was done in an area, have you attempted to make any assessment of what you would consider a realistic figure as to what might be anticipated in the way of trends?

MR. BAILEY: We have not gone that far, sir.

Q. You have not gone that far?

MR. BAILEY: No.

Q. The British American Oil have said that in their opinion if extensive work is done the trend of discoveries would go up to more than 4 trillion a year. Do you think that is at all

a realistic figure?

MR. BAILEY: I would say yes.

Q. Now, you say at page 11:

"In such an atmosphere of uncertainty,
"past growth in the aggregate should not
"be used as a means of realistically
"estimating the trend of future growth
"given adequate markets. It is bound to
"be unrealistically low. The reserve
"figures compiled by the Board over the
"years to date, and used in projecting
"future growth trend, illustrate only the
"ultra conservative future growth which
"will occur in spite of the fact of no
"assured near term markets."

Have you given any thought to what formula should be applied, in your opinion, in determining whether or not a permit to export gas should be granted?

MR. BAILEY: You mean a formula taking into account the best discoveries and in some way developing it into an indication of a trend?

Q. What I am thinking of is this: that at the present time both the Province and the Federal Government grant permits under certain conditions for export, and the Province has been endeavouring to make certain that there are adequate reserves for a period of 30 years, adequate proved reserves. Do you think that that formula should

be in any way changed? Should a permit only be granted when you can see as of the moment sufficient reserves proved up for a period of 30 years?

MR. BAILEY: Oh, I see. I think perhaps Mr. Nichols should answer this.

MR. NICHOLS: No, I do not believe that that is a realistic formula or a realistic basis. We have tried in this brief to give examples of the type of growth that has taken place under circumstances where there really was no incentive to look for gas. In other words, gas was found because economics were good to look for oil.

MR. FRAWLEY: Could the witness raise his voice a bit?

That Gas was never discovered as a by-product of an oil search and, once having been discovered, more was proved purely on the basis of commitment drilling in order to protect the property. There may have been further drilling because of the liquid content of the gas and they thought there was value in the drilling on that basis -- there has been little done because we were not assured of a market and the point we are trying to make here is that until the incentive exists to go out and develop and explore for gas with an assured market as, for example, we have had with crude oil which the proved reserves in consequence are bound to be restricted and limited compared to what they would be. So, if you take an estimate of the proved reserves from, say it was made in 1945, 1947 and 1949 and so forth up to the present at intervals, and projected it into the future, it is bound to be a low figures because it is based on a completely restricted atmosphere with no incentive. I do not know whether that is ---

Q. I understand that, Mr. Nichols, and I think you have made the point pretty well in your submission and I say so with respect but what I am seeking for is help for the Commission in recommending some formula that would be a realistic one in dealing with each application that may come before us.

MR. NICHOLS: Mr. Pattillo, I cannot suggest such a formula today. I would go so far as to say one could probably be derived by studies of areas where the incentive was provided and a study of the growth that had occurred in those areas might be a more realistic approach to it. We have not worked or attempted to derive one.

If I might steal some thunder from the British American presentation yesterday, I noticed one interesting statistic in there and it was a very small amount of percentage development in Canada considering the potential of the area in relation to, for example, the United States and, perhaps, there are other areas that have received as dense a drilling pattern.

Q. I wish you gentlemen would give consideration to the matter.

MR. POWELL: We will do that, Mr. Pattillo.

MR. BECK: There is one point I would like to make. I think there has been, possibly, some justification for these amounts of reserves in so far as it meant a financing of pipe lines as such and they had to have the guarantee that these pipe lines would be paid out in the requisite amount of time. I think definitely that should not be applicable to any future reserves dedicated to that pipe line with the need for that backlog which the gas producer is losing might be much less since

the initial investment has been taken care of by the initial contracts. If it is a new line, I agree there may be something for these long reserves. I am not prepared to say 20, 30 or 50 years. While there should be a requirement, I do not think we should get married to this 30-year number and I definitely feel any new reserves attracted for additional export over and above the ones that are now in force should, certainly, not demand that backlog that has been initially put in. What the formula would be, would be a matter of arithmetic and a matter of economics as to the amount of reserves demanded and consequent other factors which, of course, I am not prepared to give any data on.

Is that, partially, what you were looking for?

Q. That is, partially, what I was looking for. I was just wondering if you gentlemen would like to give further consideration to the matter and see if you can make a recommendation to the Commission.

MR. BAILEY: We would like to, very much.

Q. Looking at page 12 of your brief you make this observation:

"Perhaps the only way in which Canadian "domestic consumers can be protected over the "long run against some of the impact of rising "gas prices, is by participating in an arrangement

"whereby local and export markets are combined, "in such a way that maximum economies of pro- "duction and transmission are possible."

Then, you go on and develop that. I was wondering, Mr. Bailey, if one of you would care to give some further expression of views as to the thought back of that statement.

MR. NICHOLS: Perhaps I should simply say the purpose of this being in here, this particular paragraph, or illustration -- we were primarily concerned to attempt to lead into a specific illustration of, and we hoped a clear one and an understandable one, in which it would be demonstrated that high load factor market was advantageous to the domestic local consumer. Unless the domestic consumer or -- let me put it this way: if the domestic consumer refuses to go this suggested route and prefers to get his supply of gas directly from some field through an individual transmission line, if he preferred to go that route it was going to cost him a lot more money for his gas. Whereas, the company of the high load factor of the transmission line system would bring him his gas considerably cheaper. I appreciate, in essence, that I have simply gone back over this whole thing and put it another way but I will try again if I am off the track.

Q. Is this what you are saying or

attempting to say: that you would consider it wrong to dedicate certain fields for certain local uses only and then not proceed to use those fields until such time as they are required for local purposes?

MR. NICHOLS: Yes, sir. I would consider that to be the case for two reasons. First of all, because it would be an impossible situation for the owner and producer of the equity interest in the field and, also, because it would result in a higher price of domestic gas to that very same owner, if you want to carry it to that extent, in his house.

Q. Were you envisaging in that statement about high load factor that each person who came in here seeking an export permit whereby they proposed to take gas to California or Ontario or to the middle states would enter into a contract with the local utilities whereby they could acquire so much of their requirements from the exporter and have that as one of the terms of the permit?

MR. NICHOLS: Mr. Pattillo, I do not feel I am an expert in anything here and, certainly, I do not feel I am an expert in the gas transmission pipe line business or in buying it or transmitting it and selling it. I have not considered the matter beyond the point that, for example, if a 36-inch transmission line came by a gas dealer's X miles from Calgary and then came by Calgary that

it would be a lot cheaper for them to bring a little gas and siphon it off in Calgary than it would be for Calgary to go and build its own transmission line

Q. From the Carbon field?

MR. NICHOLS: I did not say the Carbon field. You are getting into a subject on which I cannot and do not appear as an expert.

MR. BAILEY: I know we have a problem. I am a director of Alberta Trunk Line and, as you are probably aware, we have a unique company in Alberta because the trunk line, actually, was set up to pick up gas as a huge gathering system and to deliver it. Our first customer, Trans-Canada, which is in the future, wanted us to deliver gas to the south and another pipe line -- one of the problems we were concerned about, what do we do about towns that come up to us and say "We would like to get some gas". There was Sibbald, Oyen, and I have forgotten the name of the third one, that wanted to get gas. We felt that that was the function of the utility company. They finally went to Trans-Canada and made a very good deal to get gas for these three towns which, otherwise, they would not have gotten, I am sure.

Q. You say on page 13, Mr. Bailey, that "Provided the public interest is adequately safeguarded ---". It is quite clear from what

you gentlemen have said you are all satisfied that there are adequate supplies of gas and there should be no difficulty so far as quantities are concerned in exporting gas. When you make that observation "Provided the public interest is adequately safeguarded , excluding the question of quantity for the moment, what are your views as to the measures that should be taken to see that the public interest is safeguarded?

MR. BAILEY: The first part of that, I would say, to go on with the general idea that the Alberta Government has pursued and which may have delayed export and that is, there should be some known fixed amount of gas that will be held back or in reserve to meet our requirements here in Alberta. I think we have quite agreed now that that, probably, is a good thing.

The other factors, I think, are where the public interest is protected as, for instance, in the other provinces. I believe they have utility boards which can investigate the price being charged to the consumer, the rate charged by the transmission lines carrying the gas and, we had in mind some general overall authority that would be there protecting the prices and rates and quantities. I am sure that the same steps

taken to see that the Canadian consumer is being taken care of would be taken to protect

the Alberta consumer.

Q. Mr. Bailey, have you any views, you or any member of your group, as to whether there should be any formula as to the price received for gas being exported in Canada?

MR. BAILEY: I think that would take some considerable thought. We might be able to come up with something to answer it, but offhand I think it would not be possible.

Q. I wish you would give some consideration to that. In other words, whether, in your opinion, to get a market, the gas should be sold at less than cost, and whether if, not sold at less than cost there should be some limitation on the amount of profit. You see, in your conclusion you say, "We urge immediate approval of expanded markets for our surplus natural gas, with adequate protective measures for the Canadian people." I am sure the Commission would like to know what protective measures you have in mind.

MR. BECK: We believe that to be a matter of physical as well as economic interest and that the public would be served by making large quantities of gas available which, otherwise might be uneconomical. It is conceivable, for example, Savanna Creek or East Calgary would, not in themselves be produced and processed for local gas markets simply because the investments are large

and the requirements are on such a grand scale that the local consumption could not satisfy the economic need to find and develop such a quantity of sour gas field. We feel that the interest of the people would be largely served by making these large volumes of gas available for export out of the province and thereby making available to the people the excess of the gas to fill the needs of the community.

Q. Do you mean by that that if a producer is lucky enough to find a large field that is going to be expensive to produce he should be able to export his gas and get a good price for it but if the producer discovered a nice dry gas field he should not get very much for it but just sit and wait until Calgary wanted it or Edmonton?

MR. GALVIN: To the contrary, dry gas for exporting is at a premium because of the peaking not available in sour gas. Gas is not gas as such. In the ground it comes in many forms. It comes as dry sweet gas, which has one use, one availability; it comes as sour gas which has another use and another kind of availability. It ends up in the gas fields as being the same but it does not start out in the ground as being the same. There is a vast difference in the nature of these gases and these problems should be considered as they affect the producer as to the investment and availability and

use of his gas. Sweet dry gas is premium gas because it is available on short time and can meet peak loads. Sour gas is not high load factor gas because of processing and, therefore, has a different kind of use, a use, perhaps, suitable for export in large quantity. I do not suggest, however, that we should restrict the export of sweet dry gas.

Q. Now, Mr. Bailey, you have not made any comment here at all about the problem of the independent producer when he runs into sulphur, LPG's and that sort of thing. Would you care to make any comment to the Commission?

MR. GALVIN: Would you be more specific, Mr. Pattillo?

Q. One of the things we have been hearing about several times during this hearing is that it may be that there is not as much gas as we are talking about available for export because in order to produce it we would be bringing on the market substantial quantities of sulphur, substantial quantities of LPG and they might create a very great problem market-wise, and it might turn out it would not be economic to go ahead and produce the gas.

Now, have you any views on that in so far as the independent operator and producer is concerned?

MR. GALVIN: It would be obvious in high export, you would have large quantities of material to dispose of; protane, butane and condensate and sulphur produced from the sour gas and, surely, these products would have to find a market. I do not think we understand what these markets would be but we know from experience in gas liquid markets, in the low residual gas sale markets from time to time there are surpluses. These are normal and exist in the gas sale markets.

MR. BECK: To me, that is no more a difficult problem than would be the risk that would apply when a producer finds a sour heavy grade of crude. He has difficulty finding a market for it but it seems to me it is part of the inherent risk of the business. If I might say so, we can get over-regulated and the same thing applies to this matter about the protective measures we could be asking for. I think, essentially, a lot of consideration might be given -- granted the amounts are here -- by the Utility Board to protect the general interest and to see there is no over-charging possible. We may be harming the smaller producer by more intensive regulation than less of the so-called protective measures.

MR. POWELL: If I might just interpret your question: the effect on the independent producer is certainly more drastic than on the major

producer because it is going to involve huge expenditure for sulphur and gas processing plants. We have a problem in our own company. We have both of these and we realize there is going to be a lot of sulphur stored and other products kept in the ground which would add to our cost and it does affect the smaller producers much more than it does a larger company.

MR. NICHOLS: I would just like to say one more thing in connectio with that and that is, historically these situations have arisen before. There has been a flood of sulphur and a flood of distillate in relation to natural gas production. It is extremely difficult, in my view, to decide in advance how they are going to be handled. But, historically, they have been handled and the matter has been smoothed out over a reasonable length of time so that I feel that the whole matter is being turned around backwards if we are concerned about the by-products of natural gas and want to leave the whole business in the ground because we are afraid the market might get a little soft.

Q. Mr.Bailey, you referred to an exhibit, Exhibit No. 1 at the top of page 13. We do not seem to have it in our copy. Are you keeping it for safekeeping?

MR. BAILEY: That was not our intention;

we have 75 copies here.

MR. PATTILLO: Those are all the questions that I have.

THE ACTING CHAIRMAN: Mr. Frawley?

BY MR. FRAWLEY::

Q. Mr. Bailey, first on the question of reserves: I don't suppose you would mind if I read to you just one or two lines from the British American brief. I think that you people are advocating the same thing, and the language which British American used rather struck me; they say on page 13:

"We are, therefore, firmly of the opinion that "in determining the disposition of present re- "serves, future needs should be related to "potential growth in reserves."

Then, on page 16 they say it a little differently:

"It is our contention, however, that it is "not realistic to ignore reserve growth "potential to meet long-term requirements and "to appraise the adequacy of reserves to meet "these requirements solely on the basis of "proven reserves."

Do you subscribe to that way of stating it?

MR. BAILEY: Yes.

Q. And that is the gist of what you are saying to the Commission yourselves?

MR. BAILEY: That is right.

Q. However, Mr. Bailey, just let us be very frank: am I to understand that the Conservation Board is in any way at fault in its reserves estimations?

MR. BAILEY: No, sir, I think I would like to put it this way: I think the Board are quite proper, in view of the type of body they are, in being very conservative in their approach to the basis of their calculations for reserves.

Q. I am told -- and perhaps I should say that I am told by the Board -- that they are very conscious of the importance of trends, which is another way of saying growth potential, isn't it?

MR. BAILEY: That is right.

Q. And you have found they are very conscious of that?

MR. BAILEY: Yes.

Q. And I dare say you can rely on them to use that as a factor when considering gas export permits?

MR. BAILEY: I would say so.

Q. I was interested in what you said about supplying the towns of Oyen and Sibbald from Trans-Canada's pipe line. I was wondering ---

MR. BAILEY: It is the trunk line.

Q. The trunk line?

MR. BAILEY: Yes.

Q. When the trunk line goes by in that area -- at the present time under what load factor is it transporting the gas?

MR. BAILEY: It is a relatively small

line and I am not qualified to say what load factor it is; but, it certainly would be a great deal higher than if the three towns themselves got together and had to put in their own transmission system.

Q. I would think they would probably be able to do it if the load factor at which they would be requiring to take it and the load factor at which it was passing by were not too different?

MR. BAILEY: The load factor passing by was higher than they would be able to create themselves?

Q. Well, one of the complaints we have heard here -- to get back to Calgary -- is, you have a high load factor line coming from sour gas fields on its way to, say, California, and that is no good to Calgary, who has to have it -- except on the infrequent occasions -- at, say, 40?

MR. PATTILLO: I don't think that is quite correct.

MR. BAILEY: You are saying you have not got the capacity to meet the peaks?

MR. FRAWLEY: Q. Yes, that a 70 load factor pipe line is a difficult thing to fit into their requirements. If I am wrong about that ---

MR. BAILEY: I think you may be incorrect.

Q. Well, correct me, please.

MR. BAILEY: Well, as I understand it, a high load factor line -- first of all, if you have

got any unit of transportation, that you can double the load at practically the same cost. The more throughput you can get in the same diameter line, the less it will cost you to carry that gas, and, therefore, your high load factor means you are carrying a higher amount through the same diameter, and therefore your costs will be lower. If you had a high load factor line going past your town, and you could take gas out of it -- on a year-round basis it would be high -- but your year average cost would be much lower than on a low low load factor line.

Q. Yes, but does it constitute a problem if the load factor at which you can take it and use it is considerably lower -- the difference between, say, 70 and 40? Is that a problem?

MR. BAILEY: No, I don't think so. I think it is a benefit.

Q. And that is what you mean when you say on page 13, "We have shown that residents of Canada will not suffer, but will benefit from export"?

MR. BAILEY: That is right.

Q. Because of the fact you are able to transmit it more cheaply, and you are telling me now the fact that the community needs it on a much lower load factor basis does not present any problem?

MR. BAILEY: No, it does not.

Q. I take it that it is quite basic to your presentation that there must be an incentive for the development of our natural gas resources in this province, and that that incentive has not been present to date?

MR. BAILEY: Not to a sufficiently high degree.

Q. Because of the lack of an export market?

MR. BAILEY: That is right.

Q. Would you agree with me that the lack of an export policy has, in itself, contributed to a lack of development of our natural gas resources?

MR. BAILEY: Certainly.

MR. FRAWLEY: Thank you.

THE ACTING CHAIRMAN: Mr. Bailey, I want to thank you for your presentation.

MR. BAILEY: Thank you, sir.

THE ACTING CHAIRMAN: Mr. Pattillo, I think that is all I have.

MR. PATTILLO: Well, we will adjourn now, Mr. Chairman, and we will be picking up tomorrow with the brief of Canadian Montana and also a short supplement from the Petroleum Association which will be read in.

THE ACTING CHAIRMAN: We will adjourn

now until 9.45 tomorrow morning.

---Whereupon the hearing adjourned at 4.50 p.m. until 9.45 a.m. on Friday, February 28, 1958.

ROYAL COMMISSION

ON

ENERGY

HEARINGS

HELD AT

CALGARY,

ALTA.

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ROYAL COMMISSION

ON

ENERGY

Hearings held at Calgary, commencing Monday, February 3, 1958, at 10.00 A.M.

PRESENT:

Mr. H. Borden, C.M.G., Q.C.	-	Chairman
Mr. J.L. Levesque,	-	Member
Mr. G.E. Britnell,	-	Member
Mr. G.G. Cushing,	-	Member
Dr. R.D. Howland,	-	Member
Mr. L.J. Ladner, Q.C.	-	Member
Dr. R.M. Hardy,	-	Member

COMMISSION COUNSEL:

Mr. A.S. Pattillo, Q.C.

Mr. Miles H. Patterson.

Mr. J.F. Parkinson	--	Secretary to the Commission.
Major N. Lafrance	--	Assistant Secretary to the Commission.

APPEARANCES:

Representing Canadian Petroleum Association:

Mr. John W. Proctor	-	General Manager
Mr. Gordon A. Connell	-	Chairman of the Association's Reserves Committee
Dr. George S. Hume	-	Geologist
Mr. William D. Stuart	-	Statistician
Mr. S. D. Turner	-	Association Solicitor

APPEARANCES:

Representing Canadian Montana Pipe Line Company:

Mr. R. E. A. MacLeod	-	Counsel
Mr. J. E. Corette	-	President, Montana Power Co. Ltd; Vice President and General Manager, Canadian Montana Pipe Line Company and Canadian Montana Gas Company
Mr. L. S. Stadler	-	Manager, Gas Department, Canadian Montana Pipe Line Company
Mr. Sam B. Chase	-	Vice President and Counsel, Montana Power Company
Mr. W. H. Coldiron	-	Associate Counsel

Friday,
February 28, 1958.

---On resuming at 9.45 a.m.

---Mr. Commissioner Levesque in the Chair.

---The Chairman and Mr. Commissioner Cushing not present.

THE ACTING CHAIRMAN: Gentlemen, we will now resume our hearing, starting with a supplementary submission by the Canadian Petroleum Association. Mr. Patterson?

MR. PATTERSON: Mr. Chairman, just for a moment, before we call on Mr. Turner, in connection with some statements made yesterday by Mr. Bailey, I believe Mr. Layton has a correction to make.

MR. LAYTON: Mr. Chairman, I would like to correct what might have been a wrong impression of the evidence of Mr. Bailey. You will recall that he was discussing the availability of gas to communities adjacent to lines of Alberta Trunk and Trans-Canada Pipe Lines. On page 2815 of the transcript he used these words: "... what do we do about towns that come up to us and say 'We would like to get some gas'. There was Sibbald, Oyen, and I have forgotten the name of the third one, that

wanted to get gas. We felt that that was the function of the utility company. They finally went to Trans-Canada and made a very good deal to get gas for these three towns which, otherwise, they would not have gotten, I am sure."

Again, on page 2824 of the transcript, when he was discussing the matter with Mr. Frawley, Mr. Frawley's question was: "I was interested in what you said about supplying the towns of Oyen and Sibbald from Trans-Canada's pipe line. I was wondering ---

"MR. BAILEY: It is the trunk line.

"Q. The trunk line?

"MR. BAILEY: Yes."

Now, the impression that might have been left was that either Trans-Canada or Alberta Trunk, or both, propose to supply communities as distributors. That is not correct. My understanding of the situation with these three towns is that one of the local utility companies will apply for a franchise in the towns. They will then negotiate with Trans-Canada to see if Trans-Canada can make the gas available. If the gas is available it will then be transported by Alberta Trunk to the utility, who will distribute it to the towns.

I just wanted to make that perfectly clear.

THE ACTING CHAIRMAN: Thank you.

Supplementary Submission

CANADIAN PETROLEUM ASSOCIATION

APPEARANCES:

Mr. John W. Proctor	-	General Manager
Mr. Gordon A. Connell	-	Chairman of the Association's Reserves Committee
Dr. George S. Hume	-	Geologist
Mr. William D. Stuart	-	Statistician
Mr. S.D.Turner	-	Association Solicitor

MR. PATTERSON: Mr. Chairman, in response to certain questions that were asked of the Canadian Petroleum Association, they have prepared a supplementary submission and, also, a graph entitled "Canada's Drilling Rig Activity in 1955, 1956 and 1957".

Mr. Turner, the Association solicitor, is here today and will introduce the gentleman who will read the supplementary submission. I would ask that the submission and the graph be marked as one exhibit, C-28-1.

---EXHIBIT NO. C-28-1: Supplementary submission to the Royal Commission on Energy by the Canadian Petroleum Association and graph headed "Canada's Drilling Rig Activity in 1955, 1956 and 1957".

[illegible]

MR. TURNER: Mr. Chairman, as Mr. Patterson has said, I am appearing again for the Petroleum Association in submitting this supplementary submission to the Royal Commission on Energy by the Canadian Petroleum Association.

The gentlemen who are with me are: Mr. John W. Proctor, general manager of the Canadian Petroleum Association.

Mr. Gordon A. Connell, who is chairman of the Associations' Reserves Committee.

Dr. George S. Hume, who is one of our geologists on our special committee; and Mr. William D. Stuart, the Association's statistician.

The first point deals with the breakdown of gross additions of proved recoverable crude oil and total liquid hydrocarbons. This point arose while Mr. Patterson was questioning Mr. Connell and he asked Mr. Connell if he would supply the Commission with a percentage breakdown of the gross increase in crude oil reserves due to new discoveries as opposed to extension of reserves. That particular discussion took place at page 869 of the transcript.

The first point is the breakdown of gross additions of proved recoverable crude oil and total liquid hydrocarbons. I will read from the submission. I believe you have a copy before you.

Attached hereto is the information requested

by the Royal Commission on Energy relative to the percentage of the gross additions of crude oil and total liquid hydrocarbons, as estimated by the Canadian Petroleum Association Reserves Committee, which were attributable to revisions of previous estimates and extensions to known fields.

From the attached summary you will note that during the years 1953 to 1957, inclusive, the major portion of the gross additions was attributable to revisions and extensions. The weighted average for crude oil during the last five years amounted to 81.4 per cent, and 79.9 per cent for the total liquid hydrocarbons during the same period.

This information is indicative of what may be expected in additions to the gas reserves from presently discovered fields when markets for the gas are available to justify additional development of same.

The following is a schedule showing the gross additions of (1) crude oil and (2) total liquid hydrocarbons, by year, and the percentages of these additions that were attributed to (a) revisions and extensions, and (b) discoveries of new fields and new pools in old fields.

(Schedule on page 2834)

	Gross Additions*	(a) Percentage through revisions of previous estimates and extensions to known fields.	(b) Percentage through discoveries of new fields and of new pools in old fields.
(1) Crude Oil Only			
1951	220,300	37.7	62.3
1952	363,409	16.8	33.2
1953	246,823	61.6	38.4
1954	457,808	78.5	21.5
1955	429,427	85.2	14.8
1956	509,157	90.5	9.5
1957	206,837	80.7	19.3
(2) Total Liquid Hydrocarbons			
1952	418,054	24.1	75.9
1953	380,821	64	35
1954	469,461	74.5	25.5
1955	470,581	86.3	13.7
1956	544,662	88.4	11.6
1957	324,588	82.5	17.5

*(All figures in thousands of barrels)

In this section of the Canadian Petroleum Association brief, on page 3, dealing with possible gas reserves, it was stated with a high degree of confidence the ultimate amount of gas to be discovered in the western Canadian basin was 300 trillion cubic feet. Upon questioning Dr. Hume, Mr. Frawley asked, if it would be possible to tell the Commission what portion of the 300 trillion cubic feet might reasonably be expected to be found in this Province, and this discussion took place on page 899 of the transcript. Dr. Hume answered: "I do not think we are in a position to do that at the moment, but we will be very glad to come up with some sort of figure for Alberta", to which the Chairman, Mr. Borden, replied: it would be of great value to the Commission and the Commission would value very much the judgment and opinion of our geologist from this point, and the following discussion has been prepared by Dr. Hume, Dr. Irwin and Mr. Axford, who are members of our Special Committee.

Possible Gas Reserves: In the brief presented by the Canadian Petroleum Association to the Borden Royal Commission on Energy Resources, the possible gas reserves of the Western Canadian sedimentary basin were given as of the order of 300 trillion cubic feet.

It is obvious both on discovery experience and from the standpoint of the geology involved,

that certain parts of the basin are better prospecting territory than are other parts. Gas in large volumes is not to be expected in Manitoba, and it is highly probable the amount to be founds in Saskatchewan will be rather limited in respect to Alberta. The prospects of the northeastern part of British Columbia are undoubtedly equally as good as those of any area of similar size along the foothills and adjoining plains in Alberta. Also the area in the Northwest Territories west of Slave River and south of Great Slave Lake and Mackenzie River west to the Liard River is very favourable, particularly southwest from the west end of Great Slave Lake.

At the end of the war, Imperial Oil Limited undertook quite an extensive drilling programme in the Northwest Territories in the area largely north of Fort Wrigley and south of Fort Good Hope. Although the Norman Wells field occurs in this area, it has been demonstrated by 21 dry holes drilled as wildcat wells in various areas, that the prospects are not as good as originally believed. Farther north and west there is a very large area in the vicinity of the Peel River. There is also a large sedimentary area in the Yukon and in all this only one well (dry hole) has been drilled. This large area in the north and northwest is, therefore, difficult to assess in relation to the remainder

of the basin.

Although it is felt that the estimate of possible reserves of the order of 300 trillion cubic feet, based on the western sedimentary basin as a whole, is sound, the breakdown into provinces becomes in a large part a matter of judgment, taking into consideration the character and volume of the sediments involved in each.

Such a breakdown might, according to the committee on possible reserves, be as follows:

Manitoba and Saskatchewan	5 trillion cubic feet
Alberta	150 trillion cubic feet
British Columbia	75 trillion cubic feet
Northwest Territories and Yukon	70 trillion cubic feet
	300 trillion cubic feet

It could be that the figure of 150 trillion cubic feet for Alberta and the figure of 75 trillion cubic feet for British Columbia are both somewhat high. A safer figure for the two combined might be 185 trillion cubic feet. Recently there has been a much greater recognition of the prospects of the foothills. Favourable structures within this area are difficult to find and costly to drill, and up to the present have received only moderate attention. It would be our judgment that the figure of 80 trillion cubic feet for Alberta given to the Commission by the Oil and Gas Conservation

Board, has failed to give full consideration to the prospects of the foothills, as fewer wells relative to the size of the area (excepting Turner Valley) have been drilled in the foothills than on the plains. It is also thought that the ultimate yield of gas from the foothills will be correspondingly much greater per cubic mile of sediments than for the adjoining plains. With these facts in mind, therefore, we suggest that 80 trillion cubic feet for Alberta, as indicated by the Oil and Gas Conservation Board, is a minimum figure, and that our figure of 150 trillion cubic feet may be a maximum figure. Under these circumstances possible reserves of at least 100 to 125 trillion cubic feet for Alberta would be considered quite reasonable.

That concludes our remarks with respect to those two matters.

As Mr. Patterson has mentioned to you, we have in as an exhibit, this graph dealing with Canada's drilling activity for 1955, 1956 and 1957, and I would like to point out one thing to you, sir.

You will notice that, for each year, the graph takes a decided dip in May, and that is explained by the fact of the "road bad", when the roads are almost completely impassable and, therefore, the rigs are immobilized.

There is one other point: when we put in our figures on crude oil, remaining crude reserves, as of December 31, 1957 there was a small typographical error with respect to area 5 in Alberta, and it should be revised upwards by 10 million barrels of oil, which will result in 440,745,000 barrels for that area. And, correspondingly, the total for Alberta will be revised upwards by 10 million barrels and, similarly, the total Canadian crude remaining reserves will be revised upwards by 10 million barrels.

That is all we have to say.

THE ACTING CHAIRMAN: Thank you, Mr. Turner.

Mr. Patterson?

MR. PATTERSON: I have no questions arising out of the supplementary submission, Mr. Chairman. I wish to thank the Association for following up the questions that we requested of them.

MR. COMMISSIONER HOWLAND: Could I ask Dr. Hume what definition you are following here, is this producible or marketable ---

MR. HUME: It would be the amount of gas that could be found in the basin if the basin was developed as a whole.

MR. COMMISSIONER HOWLAND: But not necessarily the amount which could be marketed?

MR. HUME: Not that could be marketed but the amount of gas before you extract the impurities and so on.

MR. COMMISSIONER HOWLAND: Thank you, doctor.

MR. COMMISSIONER BRITNELL: Would that mean then that approximately 80 per cent of that figure might be looked upon as the amount ultimately recoverable?

MR. HUME: That is about right.

THE ACTING CHAIRMAN: That is all, thank you very much.

We will now proceed with Canadian Montana Pipe Line Company.

Submission of

CANADIAN MONTANA PIPE LINE COMPANY

APPEARANCES:

Mr. R. E. A. MacLeod	Counsel
Mr. J. E. Corette	President, Montana Power Co. Ltd; Vice President and General Manager, Canadian Montana Pipe Line Company and Canadian Montana Gas Company
Mr. L. S. Stadler	Manager, Gas Department, Canadian Montana Pipe Line Company
Mr. Sam B. Chase	Vice President and Counsel, Montana Power Company
Mr. W. H. Coldiron	Associate Counsel

MR. PATTERSON: Mr. Chairman, with regard to the submission of Canadian Montana Pipe Line Company, Mr. R. E. A. MacLeod, Q.C., is here and will introduce to the Commission the members of that company and the parent company who are here.

I would ask that the submission be filed as Exhibit C-28-2.

---EXHIBIT NO. C-28-2: Submission of Canadian Montana Pipe Line Company

MR. MacLEOD: Mr. Chairman and gentlemen, the submission of the Canadian Montana Pipe Line Company will also include the operations of the

Canadian Montana Gas Company Limited and will be presented by Mr. J. E. Corette, who is president of the Montana Power Company Limited and Vice-President and General Manager of the Canadian Montana Pipe Line Company and Canadian Montana Gas Company.

Mr. Corette has with him Mr. L. S. Stadler who is manager of the Gas Department of Canadian Montana Pipe Line Company. Mr. Stadler will be avaialable to answer any questions.

There is also Mr. Sam B. Chase, who is Vice-President and Counsel of Montana Power Company, and Associate Counsel Mr. W. H. Coldiron.

THE ACTING CHAIRMAN: Thank you, Mr. MacLeod.

MR. CORETTE: Mr. Chairman and members of the Commission, first on behalf of our group I would like to express our appreciation for your kindness and consideration in arranging our appearance today instead of yesterday because we literally sat alongside an aeroplane in Butte, Montana, from Tuesday afternoon until one-thirty yesterday afternoon waiting for the snow to stop and the clouds to rise so we could make this presentation to you. We feel very guilty about the fact that it was causing you any inconvenience and we were very grateful for the consideration which you have shown us.

In addition, we are appreciative of being

given the opportunity to appear and present to you all the facts in which you may be interested in connection with these two Canadian subsidiaries of the Montana Power Company and of the Montana Power Company's operations in Montana which are necessarily so interrelated to the operations of these two Canadian subsidiaries.

With your permission I might now proceed with the brief to a point where I would ask your permission to make some verbal additions to it on matters which appeared to me last evening to have greater importance than I previously thought they had.

THE ACTING CHAIRMAN: Please proceed, Mr. Corette.

MR. CORETTE: Introduction: The brief being presented to your Commission has two separate and distinct parts in so far as our export of gas from Canada is concerned:

First, it will deal with the export of gas to Montana from the Pakowki Lake region in the southeastern part of Alberta since February 1952 and in the future; and

Second, with the proposed export of gas from a point on the southwestern border of Alberta under application of the Alberta and Southern Gas Co., Ltd., now pending before the Alberta Oil and Gas Conservation Board.

[illegible]

[illegible]

[illegible]

We understand that the essential data on gas reserves, facilities and other pertinent information relating to this second part are being submitted in the brief of Alberta and Southern Gas Co., Ltd. It is our intention to supplement such information to the extent of confirming the existence of the contractual relationship between Canadian Montana Pipe Line Company and Alberta and Southern Gas Co., Ltd., and of showing the market requirements in Montana and necessity for the gas purchased from this source of supply.

Alberta, British Columbia Relationships with Montana are friendly and mutually beneficial:

The northern border of Montana, extending for more than 550 miles, adjoins the Provinces of Saskatchewan, Alberta and British Columbia. Past and present relationships between the Provinces and Montana have been both pleasant and mutually beneficial. Some examples of this inter-relationship are:

Consolidated Mining and Smelting Company is currently importing to Trail, British Columbia, phosphate rock produced by its subsidiary Montana Phosphate Company at Garrison, Montana.

The Simplot Company is shipping phosphate rock from its Montana operations to the Northwest Nitrochemical Plant at Medicine

Hat, Alberta.

We are advised that North American Utilities Corporation, a Montreal organization, is investigating the economics of processing a Montana source of iron ore for shipment to and use in a steel plant operation in Alberta.

During the period 1934 to 1937 when crude oil production in Alberta was inadequate, The Montana Power Company sold 1,181,000 barrels of crude oil from its Cut Bank production to British American Oil Company in Alberta.

Last year when B. C. Electric Company was in need of additional electrical energy due to poor water conditions in British Columbia, The Montana Power Company supplied 81,640,000 kilowatt hours, with a peak demand of 40,000 KW, for a period of several months.

If I could interject a word there: I might say that these sales by Montana Power Company first to British American Oil Company in the early 1930's and last fall to British Columbia Electric Company were of real financial benefit to our company. The products sold naturally were surplus to the requirements of our area and we were very appreciative of the market;because of the financial and economic conditions at the time it was a particularly good example of the benefits which can come from this mutual relationship between Montana and the

adjoining Province in Canada.

In the early 1930's we were just coming out of the depression and the oil market in Canada was very important to us. This was terminated by the Canadians because of the development of your own resources here. As you know, there has been a rather serious business adjustment occurring in the United States. In the sales of electricity to British Columbia Electric Company last fall it was not only beneficial to British Columbia but the revenue was also very beneficial to our company and, coming at a time when our business was off and our revenues somewhat reduced from our own activities in Montana.

The towns of Coutts and Milk River, Alberta, remote from gas sources in the Province, have been receiving natural gas supplied from northern Montana fields.

Canadian-Montana Pipe Line Company - Canadian-Montana Gas Company Limited:

Canadian-Montana Pipe Line Company and Canadian-Montana Gas Company Limited are wholly-owned subsidiaries of The Montana Power Company. The Pipe Line Company owns and operates approximately 18 miles of 16-inch transmission line extending from a point near the Pendant d'Oreille, Alberta camp to a point of connection with The Montana Power Company system at the international

border.

The Canadian-Montana Gas Company Limited owns and operates the production, gathering, dehydration, compression and other operating properties in the Pendant d'Oreille, Manyberries, Smith Coulee, Black Butte and Comrey fields in the Pakowki Lake areas. This company holds leases and gas purchase rights on approximately 165,000 acres within the boundaries of these five fields. The gathering line system connecting 31 wells owned by the company and 4 wells of independent producers, consists of 113 miles of lines ranging from 2-inch to 12-inch diameter. Other facilities owned include an 1100 HP compressor station, measuring stations, dehydration units and two field camps at Pendant d'Oreille and Manyberries.

We have prepared for your special use here this map which you see on the easel and if I could point to it very briefly it might be helpful.

On a small scale this is the so-called Pakowki Lake. These lines that you see in different directions are the gathering lines of Canadian Montana Gas Company which bring the gas to the main transmission lines and runs down through the border and at the border the transmission line is connected with the transmission line of the Montana Power Company and brings the gas to Cutbank, Montana. Now, this map in effect is a map of Montana, of

Southern Saskatchewan, Alberta and British Columbia and the red lines in Montana show the main gas transmission lines so you will see it is a completely interconnected system except for the small system in the Lewiston, Montana area. We buy gas from the whole northerly part of Montana in addition to this gas which is imported to Montana from the Pakowki Lake area.

Practically all of the material required in the installation of the above-mentioned facilities has been purchased through Canadian suppliers and construction has been carried out through Canadian contractors. The employment of Canadian personnel, the purchase of materials and supplies in Canada, the payment of taxes, rentals and royalties are all of economic benefit to Canada.

The operations of both of these companies in Alberta are effectively regulated by the Provincial and Dominion Governments.

Exhibit No. 1 shows the principal facilities of both of these companies and also the leased and contracted acreage in the Pakowki Lake area.

If you would turn to the back of the book and just look at the map, which has on it the red and yellow cover, it will show you the acreage which is owned or controlled by Canadian Montana Gas Company. It is the first exhibit in the back of the book.

The Montana Power Company: The Montana Power Company is an independent public utility supplying electric energy, natural gas and other utility services in the State of Montana. The service and rates of The Montana Power Company are completely regulated within the State by the Montana Public Service Commission. The import of natural gas is subject to the jurisdiction of the Federal Power Commission. The Company serves electricity over most of the State of Montana in a service area having a population of 487,000. Electric service is supplied directly to 122,000 residential customers and also to commercial, industrial and municipal users.

Natural gas service has been supplied by the company in Montana since 1931. Natural gas is supplied in 50 cities and towns in Montana to over 57,000 direct customers, of whom more than 50,000 are domestic users. It also furnishes gas to independent companies in three cities in which there are approximately 18,000 gas users. The population served with natural gas is approximately 250,000.

The natural gas system of The Montana Power Company is shown on Exhibit #2.

Exhibit #2 is very similar to the map which is on the easel here.

This map also indicates by a dashed line the proposed connection between a point on the Alberta-Montana border and Cut Bank, Montana to implement the proposed gas purchase from Alberta and Southern Gas Co. Ltd.

I might point that out on this large map here. The contract with Alberta and Southern provides that the gas will be delivered through the Alberta grid trunk line to the Montana border and Montana Power would then have to build this line which is in red, the broken line on this map.

The Montana Power Company operates approximately 1,180 miles of gas pipe lines, ranging in size from 4" to 20". The transmission system is completely inter-connected and integrated and extends from the Alberta-Montana border to the Clark's Fork field in southern Montana. The gas imported from Alberta has been essential to supplement that produced from United States sources to supply all customers.

The Montana Power Company is a long-established operating utility with extensive experience in the electrical and natural gas fields. Additions to utility plant for the six years, 1952-1957,

including expenditures by subsidiaries in Alberta, amounted to approximately $78,000,000. Of this total $17,800,000, including the $10,000,000 purchase price for the Pakowki Lake reserves, has been invested in Alberta. The Company enjoys a fine financial reputation which enables it to plan and complete successfully any of the projects contemplated herein. Enclosed with this submission is a copy of The Montana Power Company's 1956 Annual Report, which is the most recent available, summarizing the company operations.

In our State we think our company is fairly large-sized but, when I compare it with Trans-Canada or the Pacific Gas and Electric or Northern Gas Company, I realize we are very small fish in the pond. I might say, in plant account, customers, dollars invested, we are 10 per cent as large as Pacific Gas and Electric; but in spite of the fact that we are small, our service, of course, is vitally important to the quarter of a million people whom we serve with gas in the State of Montana.

Alberta and Dominion Governments Issued Export Permits After Extensive Hearings: A review of occurrences leading to the export of gas into Montana from the Pakowki Lake area of Alberta will contribute to the better understanding of this submission. This export, currently in operation,

was initiated in February 1952.

Following the close of World War II, The Montana Power Company was seriously concerned about the size of its then existing gas reserves. There was an urgent need to supplement its then available sources of supply necessary to meet the market requirements but all efforts to obtain additional reserves in Montana and Wyoming had met with little success. In 1949 the Company turned its attention to Alberta.

McColl Frontenac Oil Co., Ltd. and the Union Oil Company of California had been exploring for petroleum and natural gas in the southeast corner of Alberta and had discovered an area which gave promise of developing commercial gas reserves. No Canadian market existed for this gas; it appeared to be beyond economic reach of the local utilities, and accordingly, in 1949 Montana Power commenced negotiations to purchase this gas reserve and to continue the development. These negotiations culminated in the purchase by The Montana Power Company of lease rights in the Pakowki Lake area by an agreement dated June 14, 1950 (Exhibit #3 hereto), subsequently assigned to Canadian-Montana Gas Company Limited. Changes have been made in the leased acreage subsequent to the date of said agreement due to other acquisitions and surrenders.

An application for export to Montana of

the gas covered by the above-mentioned agreement was filed with the Alberta Petroleum and Natural Gas Conservation Board on August 2, 1950 in the name of McColl Frontenac Oil Co. Ltd. and Union Oil Company of California, who were jointly obligated under terms of the agreement to process an application for export. The application recited that if necessary authorizations were granted, the applicants agreed to assign their interests therein to The Montana Power Company, or a wholly-owned subsidiary thereof.

Additional information in support of this application was furnished the Petroleum and Natural Gas Conservation Board on October 11, 1950.

On May 31, 1951 Canadian-Montana Pipe Line Company was incorporated by Act of Parliament, Chapt. 86 of the Acts of 1950-51, after hearings before the appropriate Government committees in Ottawa. This company was incorporated to own and operate the transmission line to the international border and to export the gas from Alberta to The Montana Power Company. The Canadian-Montana Gas Company Limited was incorporated September 14, 1950 as an Alberta company to own the leases and operate the producing and gathering installations.

The Alberta Petroleum and Natural Gas Conservation Board held joint hearings on the McColl-Union Oil Company application and the

applications of others during November and December, 1950. On January 20, 1951 the Board denied all applications because sufficient gas reserves for the future needs of the Province had not been established. At that time the Board found the reserves of the Province to be 4.7 trillion cubic feet.

The Korean War had started in June, 1950 and by the spring of 1951 the production of strategic metals was extremely important to the Allied war effort. The shortage of gas reserves available to The Montana Power Company dictated that serious consideration be given to the curtailment of large industrial customers to permit continuation of service to the residential and commercial consumers. The largest industrial customer was The Anaconda Company, a producer and refiner of non-ferrous metals. It was the decision of the Governments of both Canada and the United States that gas service should continue to this important metal supplier. On April 7, 1951 the Alberta Legislature passed the Gas Export Act, Chapter 36, Statutes of Alberta, 1951, authorizing the issue of the permit next mentioned. The Petroleum and Natural Gas Conservation Board issued a gas export permit on June 11, 1951. The permit was issued for a period of five years and authorized export of gas from three of the company's fields during this temporary period

solely for The Anaconda Company's requirements.

Appearances were made during June, 1951 before the Board of Transport Commissioners of the Dominion of Canada and required data in respect of this export were furnished. Export from the Dominion for these special circumstances was authorized by Order dated June 23, 1951.

Application was immediately made to the Federal Power Commission of the United States for import approval, and after hearings in September and October, 1951, Presidential approval for import was secured February 2, 1952 and the Federal Power Commission approval was secured February 5, 1952 for import in conformance with the Canadian permits. Export commenced February 7, 1952 under the permits.

In the interim the application for general export was continued before the Petroleum and Natural Gas Conservation Board in December, 1951. The Board denied this and all other export requests on March 29, 1952 and found at that time that Alberta reserves had increased to 6.8 trillion cubic feet. The gas reserve trend continued to increase in Alberta, with the result that the Petroleum and Natural Gas Conservation Board found the gas requested to be exported to Montana to be surplus to the present and future needs of the Province and approved the application for general export of gas from the Pakowki Lake area to Montana.

[illegible]

The permit issued by the Alberta Government May 14, 1954 provides for export from five fields in the Pakowki Lake area in annual quantities not to exceed 20 billion cubic feet and daily quantities not to exceed 100 million cubic feet. The permit is for a period of 20 years. At the time the Alberta permit was issued the reserves in Alberta were determined to be 11.5 trillion cubic feet of gas.

The company made application on July 14, 1954 to the Federal Power Commission to amend its existing import order. Hearings were held before the Federal Power Commission in November, 1954 and January, 1955. The Federal Power Commission permit issued May 19, 1955 for a term of years identical to that authorized by Alberta.

A license to export gas, under the conditions imposed by Alberta, issued from the Department of Trade and Commerce of the Dominion of Canada on September 2, 1955. The term of this license is five years from its date of issuance.

I particularly point out that that is 5 years as compared with 20 years in the Alberta permit and 20 years in the Federal Power Commission.

Summary of Pakowki Area Export: To summarize the details of the preceding pages, the record shows that application for general export of gas to Montana was filed immediately after the execution of the agreement by which The Montana

Power Company was to acquire the Pakowki Lake properties and that an interim and temporary export was permitted to the mutual benefit of Canada and the United States. Continuing applications were made for general export of gas to supply The Montana Power Company's increasing market requirements. All applications of the company and others were denied until the Alberta Board was satisfied that the existing reserves in Alberta, together with the rate of discovery of new reserves, had progressed to a point where it was established that this relatively small reserve located in a sparsely settled section of the Province was surplus to the present and future needs of Alberta and of Eastern Canada.

Gas Reserves: According to our most recent reserve estimate the gas supplies available to the company in the United States approximate 274 billion cubic feet. Gas reserves estimated for Alberta fields now connected to the gathering system of Canadian-Montana Gas Company in the Pakowki Lake area approximate 261 billion cubic feet.

The gas now being exported to Montana is produced from the Pendant d'Oreille, Manyberries, Smith Coulee, Black Butte and Comrey fields as indicated on Exhibit #1.

Markets and Supply of Gas: The total

demand for natural gas on The Montana Power Company system during 1957 was about 34.5 billion cubic feet, of which approximately 10.7 billion cubic feet was supplied from Canada. Exhibit #4 shows the annual market and supply forecast for the period 1957-1965, inclusive.

You may wish to turn to Exhibit 4 in the back of the book and to very briefly look at that sheet. It is the very last sheet in the book, immediately inside the back cover, and it shows the annual markets, the anticipated supplies from U.S. sources, the anticipated use of the Pakowki Lake gas, the anticipated supply from the Alberta and Southern Company contract, and it shows that, beginning in 1963, we need additional gas to that which we already have commitments for, either from our own reserves or from Alberta and Southern or through other purchase contracts.

The market estimate contemplates normal growth of the system at 3 per cent per year for all business, exclusive of major industrials. The company recognizes, however, that there may be additional growth in its industrial customers, that new industries may be established, and that additional areas may be served which will increase the system gas requirements above those shown in Exhibit #4.

Exhibit No. 4 also shows the anticipated sources of supply necessary to satisfy the estimated market. For purposes of this submission we have assumed favourable action on the application of Alberta and Southern Gas Co., Ltd., which will deliver us an estimated 10 billion cubic feet per year starting in 1961, and extension of the Dominion licence for export from the Pakowki Lake area. The important factor in Exhibit No. 4 is the amount of gas which will have to be obtained from unspecified sources starting in 1963. We feel that Alberta, because of its proximity to our service area, is a logical place to look for future supply.

As shown by the findings of the Oil and Gas Conservation Board, the gas reserves of the Province are constantly being expanded as additional exploration and development takes place. The following table shows the trend of increase in gas reserves:

Date of Board's Finding	Reserve Found	Increase
January 1951	4.7 trillion ft.	-
March 1952	6.8 " "	2.1
November 1953	11.5 " "	4.7
November 1955	15.6 " "	4.1
January 1957	18.3 " "	2.7
	Increase in 6 years	13.6

Local Alberta requirements for gas service in the Pakowki Lake area have been satisfied. Rural customers adjacent to the gathering system shown in Exhibit No. 1, and the hamlet of Manyberries, Alberta, are presently being supplied with natural gas service by Canadian Montana Gas Company Limited.

The Montana Power Company's largest gas customer is The Anaconda Company, with mines at Butte and smelter and refining operations at Anaconda, East Helena and Great Falls. Gas has been supplied to the Anaconda Company operations since 1931 when The Montana Power Company first entered into the natural gas business.

MR.CORETTE: Mr. Chairman, and this is the point at which I would like to have the privilege of making some verbal statements in connection with the Anaconda matter. I would like to say in connection with that request, and as an introduction to it, that I do not believe I realized until last night when I visited here that there was a serious question, apparently, in the minds of some newspaper people and some people who have made public statements about our gas service to the Anaconda Company and that it was a matter of some political consequence here.

In view of that, it seems to me quite important that I give you all the facts in connection with that. Do I have that permission,

[illegible]

[illegible]

[illegible]

Mr. Chairman?

THE ACTING CHAIRMAN: Yes.

MR. CORETTE: I would like to, first, say that I am completely satisfied that the statements made which are critical of this situation are not made maliciously or with any intent to do harm but they are based on facts that existed many years ago and that the writers making these statements and the people making them may not be informed of the present facts and all the information that I will be able to present to you here today.

The last statement of this type which I have read, said, and I quote: "No Canadian can be happy about gas being exported from Southern Alberta to a refinery across the line in Montana at a price which is less than similar gas, or gas can be purchased in Alberta itself."

I am certain that these and other statements of a somewhat similar nature have been based on facts that may have existed at the time this import began and that the people have not known the facts that exist at the present time and that have resulted, in part, from the export of Alberta gas by our company in 1951 when the export was approved, and the following facts existed:

The Anaconda Company was and had for twenty years been paying Montana Power Company 12½ cents per Mcf for gas. It was comparable to

[illegible]

the situation that existed in the early days of gas development in Alberta. And, second, coal was available in Montana at the high price of about $4.80 per ton at the mine and today coal is available in Montana from pit mining operations at $1 per ton. As a matter of fact, large quantities of it were offered to us for steam plant use only the day before yesterday at that figure.

Primarily, as a result of the importation of Canadian gas, the rate to Anaconda has been increased 108 per cent; from 12½ cents to 26 cents per Mcf. The rate to other industrial customers of our system has been increased, approximately, 50 per cent from 17½ to 27½ cents and the rates to the residential and commercial customers have been increased by 32 per cent.

In Alberta, I understand industrial rates for similar gas service -- by similar, I mean similar to our service to Anaconda and to our other industrial customers -- are, approximately, 16 cents. In other words, the Montana Power rate to Anaconda is 62½ per cent more than the rate charged in the Calgary area for gas for industrial use. Montana Power Company retail rates, with the 32 per cent increase, far exceed the rates for similar service in Calgary. For example, using the Montana Power Company average residential and commercial consumption and dividing

it by 12 to get a monthly figure, you get the following comparison: the average residential consumption would be 15 Mcf per month. Montana Power's rate for that would be $9.56 which is 62½ per cent higher than the rate for similar service of Canadian Western here at Calgary. Montana Power's commercial use averages 75 Mcf a month and the rate for that would be $5.88 which would be 115 per cent higher than the rate for similar service here in Calgary.

Another criticism has been that the Anaconda Company, by receiving Canadian gas at a low rate, gave an unfair competitive advantage over comparable Canadian industry.

I do not want to minimize the importance to the Montana Power Company or to the Anaconda Company or to the people of Montana of Alberta gas. It is vitally important to all of them for reasons which I will relate hereafter. I might say, however, that the industrial operations in Montana, for almost 30 years now, have used industrial gas and everything has been built around that use and if they were to have to instal all the facilities necessary to use another fuel, you can see where it would be an economic burden, a great expense and a great inconvenience without regard to the relative cost of the two fuels and, consequently, that is an item of additional

importance.

Now, without minimizing the real importance to Montana Power and the Anaconda Company and the people of Montana of Alberta gas, I would like to address myself to this purely competitive situation that the sale by Montana Company to Anaconda at 26 cents of gas from Alberta could not possibly give Anaconda any competitive advantage over any Canadian mining company because, first, the cost of metals produced by Anaconda in Montana could be affected only slightly by the use of 26-cent gas instead of the use of other fuels. My personal estimate of the increase of cost on metals produced, if other fuels were used, is that it would be less than 17/100ths of one cent per pound or 1.7 mills per pound of metals produced. The pounds of metal produced in Montana would not be affected in any way by the use of natural gas at 26 cents as compared with the use of other available fuels because the very small increase in cost would be insufficient either to increase or decrease the rate of production at any time. The price of copper or zinc sold by the Anaconda Company would not be affected. This price is controlled by world markets and national markets and would not be affected by any element of cost in the Montana operations and this element of cost, which is something less than 17/100ths of one per

cent per pound, would be so small that, I am sure, it could have no effect either on the amount produced or on the existing market or the existing price and, consequently, could not have an adverse effect on mining or smelting or businesses of that nature either in Canada or in the United States.

I think all I am saying is, from the standpoint of production and price that the operation would carry on one way or the other without any change in the quantity produced.

The United States sale of gas to Anaconda and other industrial customers is vitally important to the 250,000 people supplied by the Montana Power Company because of the elimination or reduction of sales to industry would reduce the load factor and would reduce the amount of gas going to Montana Power's facilities. This would greatly increase the amount which would have to be paid by residential and commercial customers.

As I have said, the rates to these customers have already been increased by 32 per cent since Montana Power began the importation of Canadian gas and these rates are very much higher than similar rates in Alberta.

Next, the percentage of Montana Power's total gas sales which goes to industry is about the average of the states in the United States. I have

prepared a tabulation which I thought might be of interest to you. This comes from Table 88 of the 1957 Gas Facts and it shows, by states, the percentage of gas that is sold to industry as compared to the percentage that is sold to residential and commercial customers. I have added to that table the percentage of total gas sales to industry as compared to total sales by Montana Power Company for the years 1956-1957.

MR. COMMISSIONER HOWLAND: Does that include interruptible supplies and breakdown between interruptible and firm?

MR. CORETTE: There is nothing in the Gas Facts book. It just shows the total sales to industry.

MR. PATTERSON: May we file that table: "Industrial Gas Sales as a Percentage of Total Sales", as Exhibit C-28-2-A.

---EXHIBIT NO. C-28-2-A: Table entitled "Industrial Sales as a Percentage of Total Sales."

MR. CORETTE: I think you might find that table very interesting, and you will see in the lower half of the page on the side I have put Montana Power Company, 1957, 46 per cent;in 1956, 47 per cent. This is all in MCF and that is the percentage of sales to industry and that includes all industry, firm and interruptible to which Montana Power sells gas.

Now, in connection with the rate matter: in 1960 there will have to be a further upward revision of residential, commercial and industry rates of Montana Power Company because of the increased importation of Alberta gas in the previous contract between Alberta and Canadian-Montana. The record makes it reasonably clear that Alberta has, and continues to have, large quantities of surplus gas not required for Canada's needs. The short history of the Pakowki area is a graphic example of the benefits to Alberta and to Canada by having a ready market for this gas and the benefit to Montana of being able to buy this gas. Some of the benefits to Alberta are: first, as to

Pakowki area, there is no other market which can be economically served with the gas involved. Secondly, the economics of the Pakowki area are very importantly affected by the millions of dollars which have been spent on the gas development in that area by Canadian-Montana Gas Company Limited, New British Dominion Oil Company, Canso Natural Gas Limited, Northern Natural Gas Company, and there may be other companies that have done some drilling and some work down there, but those are the ones that occur to me at this time.

Third, the payroll provided in the Pakowki area by the oil and gas operations is an important economic advantage to that area.

Four, the Alberta people in the Village of Manyberries and along the gas lines involved receive very important personal benefits from having gas available in their homes.

Fifth, practically all materials purchased by Canadian-Montana Gas Company's Pakowki Lake project have been bought in Canada, and practically all work is done by Canadian labour. You may wonder about the amount of our investment in that area exclusive of the purchase contract, and it is approximately $7,258,000. As you know, it is a sparsely settled area and I think you will see immediately that the expenditure by one company of $7,258,000 is a really important economic

advantage in an area of that kind where there are few people and very limited employment.

Now, as to the Alberta and Southern project, the benefits to Alberta and to Canada from the Alberta and Southern project have been comprehensively stated in the Alberta and Southern submission. All I have to say on that is, the sale to Montana is a definite part of the Alberta and Southern project and contributes its proportionate share of the benefits to Alberta and Canada from that overall project.

Now, I think you may be interested in some list of the benefits to Montana that come from the importation of natural gas. The importation of Canadian gas is an important benefit to the people of Montana because, one, it will make available to these people natural gas as a fuel for a much longer time than would otherwise be the case.

Secondly, natural gas is a far more desirable fuel for general use than any other fuel, particularly coal. Oil, of course, is a convenient fuel but in Montana it costs somewhat more than gas. Coal, which we consider much less convenient, is available at approximately the same price as gas but is not used because of the dirt and inconvenience of handling. I suppose that

most people like yourselves in your hoyhood days shovelled coal in your homes and shovelled out ashes, and I certainly need not tell you about the convenience of gas over any other fuel.

Montana and Alberta have a record of mutual help to each other which is the envy of the world, and the export of gas to Montana from its neighbouring Province is merely a further example of this mutually beneficial relationship.

Now, Mr. Chairman, that completes the verbal edition which I requested permission to make to the statement, and if you will now refer to the bottom of page 9 you will see the last paragraph on page 9 and the first paragraph on page 10 have been covered by what I said, so there will be nothing gain by my repeating that.

Gas from Alberta and Southern Gas Co. Ltd., is Needed: Prior to 1957 Canadian-Montana Pipe Line Company was actively endeavouring to acquire additional gas in Alberta for export to Montana to supply the increasing requirements of The Montana Power Company's system.

Pacific Gas & Electric Company became interested in acquiring a source of gas in Alberta to supply its market in California.

It became apparent that the requirements of both companies could best be supplied through a single project and that it would be to the best

interests of both producers and consumers if one company did the purchasing, gathering and transmission of the gas so far as possible. This would enlarge the area in which it would be feasible to purchase gas and make possible the payment of higher prices. The joint use of gathering and transmission facilities would result in savings in construction, operation and maintenance costs and thus contribute to the economic feasibility of the project.

In accordance with this plan Alberta and Southern Gas Co. Ltd. was organized to carry out the project in Alberta. This company has made contracts to purchase gas to supply the requirements of the utilities distributing gas in Edmonton and Calgary and also for resale ultimately to Pacific Gas & Electric Company and The Montana Power Company.

An agreement has been made for the gathering and transmission of the gas in Alberta by The Alberta Gas Trunk Line Company Limited, which will deliver the gas at points on the border of the Province.

Details of the Alberta and Southern Gas Co. Ltd. project, except for the Montana market requirements, are set forth in the brief of that company to your Commission.

The Montana Power Company and its Canadian subsidiaries are able to meet all of their financial

and operating obligations in connection with this project, as shown herein. An established market in Montana for the gas proposed to be exported from Alberta and the need for increased export is described in this brief. Exhibit #4 sets forth the requirements of The Montana Power Company gas system proposed to be supplied from Alberta reserves.

As to the Pakowki Lake area, the latest reserve estimates indicate a relatively small reserve which is located in a sparsely settled area of the Province. The gas has previously been found to be surplus to the requirements of the Province, not desired as a source of supply for the local utilities, and not contributing to any other gas export project. As of January 1, 1958 approximately 18.5% of the estimated initial reserves of the five connected fields has already been produced. If Dominion export authorization is secured to conform to the term of permit granted by Alberta, the currently producing fields will be essentially depleted when the existing Alberta permit expires in 1974. The logical and intelligent future development and operation of this area makes it important that the Dominion permit be extended to conform to that issued by Alberta.

As to the pending application for export of gas to be purchased under the contract with Alberta and Southern Gas Co. Ltd., Exhibit #4

submitted herewith demonstrates conclusively the availability of an established market.

Exhibit #4 also shows that starting in 1963 additional gas supply is necessary to supplement the sources of supply now connected in Alberta and the United states and the supply proposed to be obtained under the application of Alberta and Southern Gas Co. Ltd., pending before the Alberta Oil and Gas Conservation Board. The proximity of The Montana Power Company service area to available Alberta gas supplies points to the Province as the logical source of gas reserves necessary to serve approximately 250,000 Montana people.

The continued development of oil and gas fields and the construction, maintenance and operation of facilities necessary to produce, gather and transmit the gas required by Montana will continue to contribute substantially to Canadian prosperity.

THE ACTING CHAIRMAN: Thank you very much, Mr. Corette. I notice when you started you were very modest, you mentioned you had a small company. Well, a small company that makes $10 million profit after income tax deserves a lot of credit.

MR. CORETTE: We feel in a sparsely settled State like Montana it is quite a thing, particularly in the electrical business, to have rates

which are substantially below the national average in the United States.

THE ACTING CHAIRMAN: I think perhaps we will break for ten minutes and then continue.

---A short recess.

THE ACTING CHAIRMAN: Mr. Corette, you have something to tell us?

MR. CORETTE: Mr. Chairman, I wanted to say that I made a mistake in giving one figure which I would like to correct. In reading the comparative rates of Montana Power Company and Canadian Western in Calgary, I gave, for the commercial revenue, the wrong figure. It was a figure that applied to the residential, so, with your permission, I should give the proper reading, to correct that.

THE ACTING CHAIRMAN: Is this in the brief?

MR. CORETTE: No, it is in what I read.

Commercial use, averaging 75 Mcf a month, Montana Power's rate would be $46.16 and Canadian Western's is $21.48. Montana Power is 115 per cent higher than Canadian Western.

For the residential use, at the average use of 15 Mcf per month, Montana Power's rate is $9.56 and Canadian Western's is $5.88, or Montana Power's is 62½ per cent higher than Canadian Western's.

Mr. Chairman, I wish I lived in Calgary.

BY MR. PATTERSON:

Q. Mr. Correte, I take it from the submission that Montana Power Company is not associated in any way with any other utility company in the United States through its corporate structure?

MR. CORETTE: That is correct, Mr. Patterson. We have no associates or affiliates of any kind and no active subsidiary other than you know about, with one exception. We have, in Alberta, a small exploration company called Eltana Exploration Company and it is also wholly-owned.

Q. Looking at it the other way, you are not owned or controlled or do not have as large shareholders such companies as Pacific Northwest, El Paso, Pacific Gas and Electric, Tennessee and other major American pipe line transmission companies?

MR. CORETTE: That is correct, Mr. Patterson. Our company has about 37,000 stockholders and no stockholder owns over a very small percentage of our total stock. I think from one to two per cent of the total stock would be the largest holding of any stockholder and I am satisfied that stockholder would be a nominee, so that we really don't know who owns it.

Q. To summarize your Canadian operations, Canadian Montana Gas Company Limited and Canadian Montana Pipe Line Company are wholly-owned subsidiaries, the share interest in those is owned entirely by Montana Power?

MR. CORETTE: That is correct.

Q. And I take it that those companies

are financed by the parent company. They are not actually selling gas under contract to the parent company; they simply make deliveries and Montana Power supplies them with ufficient moneys for them to carry on their operations in Alberta?

MR. CORETTE: Yes, Mr. Patterson. That has been necessary because, in view of the 5-year permit, I am sure these Canadian companies could not be financed in any other way.

Montana Power take certain common stock for which they put up cash in full, to start with, and all subsequent money has been supplied by Montana Power Company by advances to these subsidiaries.

Q. And, so far as the Canadian operations are concerned, there is not a profit attributable to those operations in Canada?

MR. CORETTE: For the purposes of our consolidated statement, we just roll it all into one company. Of course, for purposes of Canadian income tax, we make a report to the proper Canadian authorities and pay Canadian income taxes.

Q. Now, sir, you mentioned that your gathering line system in the Pakowki Lake area includes the running of lines and purchase of gas from independent producers. Can you give us a summary of the independent producers and the prices paid to those independent producers for gas supplied,

which, I take it, would be supplied to the pipe line company?

MR. CORETTE: Yes. Very recently we have made two contracts. Each one has been under negotiation for a very long period of time, the final contract being delayed because of developments and the general situation in the area, and the two contracts under which we buy gas, the first is with New British Dominion Oil Company Limited and United States Smelting, Refining and Mining Company, and we buy gas from two wells owned jointly by those two companies in the Pakowki Lake area. Deliveries under that contract started in January, 1958.

The other contract is with Canso Natural Gas Limited and it is a similar contract, and we buy gas from them from two wells.

We have already, last fall, built the gathering line to those two wells and, again, deliveries started in January, 1958; and under both contracts we do all the gathering, all the operating, take the gas at the wellhead at a price of 8 cents for first year and increasing 1/4 cent per year throughout the entire life of the contract.

Q. Now, would you be good enough -- we have been building up a record of gas purchase contracts, and would you be good enough, through Mr. MacLeod, to supply the Commission with copies

of those two contracts?

MR. CORETTE: We would be very pleased to.

Q. Then, as you know, a subject of interest to this Commission is border prices for natural gas, and I take it that, working from that 8-cent per Mcf price and considering the operations to the Canadian-American border, you would be in a position to give us a price of that gas crossing the border. Are you in a position to give us that?

MR. CORETTE: Yes, I am. Not knowing exactly what you might inquire about, I had prepared it in a slightly different way, but I think it would give you, in a very concise manner, the answer to your question.

Q. Thank you.

MR. CORETTE: The gathering cost of this gas, based on a straight original cost less depreciation rate base, and with a return of 7½ per cent -- which, from looking at the transcript, we assumed was the one being commonly used here; but which, in my judgment, is somewhat inadequate -- the gathering cost comes out to about 4.84 cents per Mcf. The transmission cost comes out about 9/10ths of a cent and, consequently, we consider the price of gas delivered into the transmission line, that is the purchase contract plus the gathering cost, at 13 cents, and I have here a table of

what the price would be through a 20-year period, and that is delivered into the transmission line and, while I have no table for it, if you add one cent, it gives a border price, beginning at 14 cents in the year 1958 and increasing 1/4 cent per year.

Now, the transmission line is the 16-inch transmission line owned by the Canadian Montana Pipe Line Company so that the cost of gas to the Canadian Montana Pipe Line Company, which is the transmission company, starts at 13 cents and goes up 1/4 cent per year.

Q. And that transmission line is roughly what length?

MR. CORETTE: It is about 16 miles. It is very short.

It is 18 miles, Mr. Pattillo, I am off two miles.

Q. You mentioned you had a table that you would let us have.

MR. CORETTE: Yes, sir. (Producing a document)

MR. PATTERSON: Thank you. I have a table here entitled "Pakowki Lake Area, Canadian Montana Pipe Line Company, Alberta gas prices, delivered into transmission system for the period 1958 to 1978," and I think that might become Exhibit C-28-2-B.

---EXHIBIT NO. C-28-2-B: Table, Pakowki Lake Area, Canadian Montana Pipe Line Company, Alberta gas prices, delivered into transmission system, 1958 to 1978.

Q. And throughout the 20-year period, it would be a reasonable assumption to add one cent to the figure shown in the table to get a cost at the border of that gas?

MR. CORETTE: Yes.

Q. Starting at something in the neighbourhood of 14 cents and going up as the prices go up?

MR. CORETTE: Yes.

Q. On the transmission line, the 18-mile line, does that operate at a constant load factor throughout the year?

MR. CORETTE: May I have Mr. Stadler answer that question?

MR. STADLER: No, it does not operate at a constant load factor. The load factor on that system would be around 51 per cent estimated for 1958.

Q. Turning for a moment to page 4 of the submission, you make reference to the proposed connection between a point on the Alberta-Montana border to implement the proposed gas purchases from Alberta and Southern Gas Company Limited. Could you give the capacity of that proposed line?

MR. STADLER: The capacity of the line from what point?

Q. Well, as I understand it to meet with Alberta Gas Trunk at the border and I am interested in the capacity of your own line from the pick-up point.

MR. STADLER: The line calculation is based on the assumption that we will have to meet the 500-pound line pressure at Cut Bank as a down-stream pressure. Now, that 16-inch line and 537 pounds at the border matches the approximately 31 million cubic feet per day of capacity shown in the exhibit.

Q. And what will be the price that you consider you will be purchasing gas for at the Alberta-Montana border under the proposed scheme?

MR. SADLER: Well, that is based on the estimates prepared by Alberta and Southern and supplied to us: the first year the cost is 24.76 cents.

Q. And does that include transmission charges of the Alberta Gas trunk?

[illegible]

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[illegible]

[illegible]

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[illegible]

[illegible]

MR. SADLER: That is our understanding, yes, it is delivered at the border.

Q. I note from your submission that it is considered no great discoveries of further gas reserves will be made in Montana and as you know we have in this province had considerable success in our Foothills area. I would appreciate your comments as to your information in regard to the same condition applying in your State and what efforts and the results that have been found in that regard?

MR. CORETTE: For a great many years both our company and other companies have been exploring for gas in Montana and if you took a map of the State of Montana and placed on it a spot or a circle for every dry hole that has been drilled in the state it would look very much like the pattern of a shotgun shell. These wells have not producedsince 1930 any field of great consequence. In 1930 the Cut Bank field was discovered which had a total reserve at the beginning of 500 billion or 600 billion cubic feet. That is as to the State as a whole but there have been discoveries throughout the State of small reserves. Many of those are in the area in Montana immediately south of the Alberta border and with very few exceptions we either own the gas wells and the leases or we are the purchasers of the gas in the entire

area. Now, about the Foothills area in Montana comparable to the area where Savanna Creek and Pincher Creek are located there has been considerable exploration by major oil companies and several wells have been drilled without, up to this time, the discovery of any field of any consequence. Mr. Sadler might be able to tell us how many wells have been drilled in that area.

MR. SADLER: I do not recall offhand. I know of about half a dozen deep tests that we have been testing the Mississippian in an area immediately south of the border but all have been unsuccessful.

MR. CORETTE: I think we should say that explorations still continue and leases are still held in that area and obviously there is hope in the minds of a lot of people that they wil bale out a lot of their past losses in that area.

Q. Do you expect further discovery of gas reserves in the Patowki Lake area and that you will either acquire those yourselves by development or purchase gas from them?

MR. CORETTE: Yes, we would be hopeful in the Patowki Lake area that there would be the discovery of some additional reserves. I think our experience to date and the experience of others who have drilled in that area indicates we do not anticipate in that area large reserves,

but if you consider reserves any place from 10 billion cubic feet up to 75 or 100 billion cubic feet, that is about the minimum and the maximum that might be discovered down there. When we first came to the Oil and Gas Conservation Board we were told by them that they would expect us to purchase gas from others if gas was developed in that area and to create a market for that gas and we stand prepared and ready to carry that out so there will be a market for gas developed in that area even though it may be in small areas provided reserves developed are large enough to justify a gathering line to the reserve.

Q. In other words, while you have had some 261 billion cubic feet dedicated to you you have a responsibility to develop the balance and use it and take from anyone else in the area?

MR. CORETTE: That is right.

Q. Now, you discussed at some length the question of the Anaconda company. Can you tell us the early take from the Anaconda Company or by the Anaconda Company in the years for your annual market and supply forecast, which is Exhibit 4, either by way of percentage in those calculations or by proposed projected figures?

MR. CORETTE: The figure which I have, Mr. Patterson, is at 14.9 pressure instead of the standard 14.4 used in Alberta, because that is the

[illegible]

pressure at which we deliver to Anaconda Company. However, the adjustment is very slight. Anaconda used in 1956, the actual was 11 billion 489 million and it runs between 11 billion 489 million and 12 billion 500 million clear through 1961, and no substantial increase or decrease during that period, just a variation. At that time we contemplate having some additional operations coming into effect which they say may increase it up to 15 billion and it continues at that thereafter. We know of no plan for any increase thereafter. We also know from experience with them that sometimes their forecasts on how much they need are not realized and their forecast is always more than they actually take when the time comes.

Q. You mentioned to us what I take was a relatively recent change in the competitive position of gas and coal in the State of Montana. Now, I take it that you were present before the Federal Power Commission in Washington at a hearing held in November and December, 1954. Do you have any personal knowledge of that Commission?

MR. CORETTE: Yes, I do. I might not have been present every day or hour of the Commission but I was there and did testify at that hearing.

Q. It is my understanding that on that occasion evidence was given by the president of the Anaconda Aluminum Company, Mr. Caples, as to comparison

of costs of natural gas, oil and coal for Anaconda purposes both at Great Falls and Butte. I would like to read to you my information as to those figures and ask you if it agrees with your own understanding and recollection and then, further, if there is any change since that time in the light of what you told us earlier. My understanding of the evidence given by Mr. Caples was that at Great Falls coal of 11,400 B.T.U. content on a comparative B.T.U. basis is equivalent to gas at 47.7 cents per Mcf. He also said that this figure does not take into account the meteorological disadvantage of coal. The cost of oil at Great Falls including the handling charge he said was 36.8 cents per Mcf gas equivalent and for the Anaconda and Butte installations comparable figures are 48.5 cents for coal and 55 cents for oil.

He went on to say that based on average fuel consumption over the past three years from 1954 for Anaconda's operations, coal would have cost the company approximately $3 million more and oil a little over the $3 million figure more than gas.

Now, in the light of the newspaper comment and speeches that you referred to, is there any change in the picture and if so what is it?

MR. CORETTE: Yes, I think I can from

memory cover most of the elements there. I have no question about Mr. Caples' figures based on the plan that he presented as being very accurate but there has been a very great change in the circumstances since that time. First of all, Mr. Caples was using at Great Falls a gas price at that time of 17½ cents and he was using at Butte and Anaconda a gas price of 20 cents. The gas price has now been increased at both places to 26 cents.

Now, prior to 1952 or the last of 1951 the gas price at Butte and Anaconda had been 12½ cents, which I talked to you about a short time ago. The next difference is that Mr. Caples was using coal which is 11,000 B.T.U. or Roundup coal. By Roundup coal, I mean it came from the City of Roundup, Montana, it came from underground coal mines and he used a figure at the mine of $4.80 a ton. At that time the Northern Pacific Company was operating in Montana its own coal mining operations for its own use, it had perfectly enormous batches of coal. Since then it has completely converted to diesel operation and is making an effort to place this large coal mining operation on a commercial basis.

Both two years ago and two days ago, the day before yesterday, coal was offered from that operation at $1 per ton so that there is a

very major change there.

Another difference between Mr. Caples figures and those I gave you this morning, is that Mr. Caples' figures were based on converting to coal or oil as the case may be in accordance with his specific listing of cases over operations that were using gas, converting it to coal or oil, except for one conversion at East Helena where coal is used as part of the pressure and nothing else can be used. In giving you the figures this morning I used the $1 per ton for coal because that is the price at which it is available.

Now, I used the 26-cent gas rate and I assume that there would be no further conversion of the isolated places of small usage and that they would continue to use gas just like any other ordinary commercial customer and assume a conversion only at the large places of use of the Anaconda Company, such as the smelter at Anaconda, the large smelter at Great Falls, the principal heating installations at the mines, central boiler plant in Butte, so our figures resulted in a cost of only $1 per ton of coal. If you put in all the small ones that were listed in Mr. Caples' figures you come up with an average of $2.50 per ton of coal, which is the figure he used.

I believe those are the major differences..

The price of oil now is also somewhat lower than that used by Mr. Caples. My recollection is that he used $1.80 per barrel plus a handling charge for the oil which he assumed might be used at Great F lls where they already have complete standby facilities for the use of oil. Our company has had for a long time a firm oil contract at $1.50 or $1.55 for steam power plant use and we buy oil for the same use on a spot basis and put it in storage. In those places it runs from 87 cents to $1.25 so that oil would be available.

Those are the principal changes or differences, changes which have occurred since Mr. Caples' testimony, and differences in the situation which exist today as compared to the facts that existed at the time of Mr. Caples' testimony.

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[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

Q. Would you carry those figures for us a little further? I do not think you can do it now, but could you let us have a similar comparison on the coal, gas, oil equivalent, taking into account the factors you mentioned to reduce the coal price and change any oil prices so that we can be in a better position to take a look at the present position in the simple form of the 1954 presentation?

MR. CORETTE: Yes, I shall. You are asking me to work up a sheet of some kind which would summarize the assumptions which were the basis of my statement, and show these differences?

Q. Yes, sir.

MR. CORETTE: We would be pleased to do that and submit it to the Commission.

Q. We have had some evidence in regard to future projected reserves in the Western Canadian basin which we have, of course, arbitrarily cut off at the 49th parallel, but it would be of interest to the Commission if you could tell us something about the future projected reserves in the State of Montana as it forms a part of the general geologic area.

MR. CORETTE: I fear my qualifications on that are rather limited and that all I could say is this: I am familiar with every gas discovery that has been made in Montana in the last 10 years

and that those gas discoveries have not been sufficient to develop any appreciable additional reserves, and that we do not anticipate the development in Montana of any large gas reserves in the future unless there are discoveries in the foothills area of a type comparable to Pincher Creek and Savanna Creek. I am sure there is no one in the world that could give you any forecast of that; it is just an absolutely unknown quantity.

Q. What other outside sources of supply of gas are available to you aside from the Canadian sources?

MR. CORETTE: We buy gas throughout the Northern Montana area from Havre, Montana, all the way to a point between Cut Bank and Browning, Montana, and in an area south of the Alberta border reasonably adjacent to the Alberta border. Some of those fields by name are: the Cut Bank field, Reagan field, Utopia field, Whitlash field, Keith and East Keith field, Bear's Den field, Flat Coulee field, Bowls field. I think that is, substantially, all of them. Then, at the southern end of our system we buy gas from the Dry Creek field. We are entitled to the total output of the Dry Creek and the total reserve, and also from the Clark Fork field north of the Montana border, and in Montana we have a purchase contract through which we buy from the Montana Utility Company at

Warren, Montana, just north of the border, gas produced in Wyoming and transmitted by the Dakota-Montana Utility Company to Montana and on over into North Dakota.

Q. You gave us a figure for the gas supplies available to the company at, approximately, 274 billion cubic feet. Do you know that figure of total gas reserves as of today for the State of Montana?

MR. CORETTE: I would not say for the State of Montana, but that is the total gas reserves which are either owned by or dedicated to the Montana Power Company, and those are the gas reserves to which I have just referred in the various fields I have listed.

Q. What I am getting at is this: do you know what else there is in Montana besides what is under contract or dedicated to your company?

MR. CORETTE: In general, in Eastern Montana and in Northern Montana, east of our service area, and in Southern Montana there are some reserves dedicated to the system of Montana-Dakota Utility Company. I am not familiar with the exact amount of those reserves, perhaps Mr. Stadler is.

MR. STADLER: I do not recall the figure.

MR. CORETTE: The reserve figure I gave for Montana Power Company is based on a very recent study by Ralph E. Davis.

Q. What other methods of supplying your needs, aside from the Alberta Southern scheme, have you canvassed?

MR. CORETTE: We have followed these methods: we have explored on our own throughout Montana for additional gas; we maintain a full-time geological department in Montana of four people who constantly work on the development of our present reserves and on exploration for new reserves. We have drilled many wells without having developed any appreciable reserves.

In addition, in the Pakowki Lake area we continue to explore for gas and we also were engaged, prior to the time we made the arrangement with Alberta Southern, in an effort to purchase gas throughout Southern Alberta, with the thought if we were able to purchase it, we would then apply for export. At that time Pacific Gas and Electric also came into the picture. We concluded, if we could join with them in a longer transmission line, it would put us in a position to share that surplus gas that might be purchased throughout a good part of the western part of Alberta, and that is how we went into the Alberta Southern arrangement.

Since we made the arrangement with Alberta Southern we have not been negotiating for gas purchase other than in the Pakowki Lake area. We still bid for other reserves when they are put up

in Alberta and carry on some development activities of our own.

Q. In the negotiations prior to Pacific Gas and Electric entering the picture, at what prices were you then talking to producers?

MR. CORETTE: As far as we had gotten in prices, we had no agreement, but we had used the Trans-Canada price as a basis and were talking in the neighbourhood of that price or slightly higher prices. We had no price agreements as of that time.

I think I should say, also, that that applied in the Pakowki Lake area, that the price which had been paid in any part of Alberta had been considerably less at the wellhead than the price at which we have agreed to purchase gas, and that our price to the two companies from which we purchased gas was equivalent at the transmission line to a price of about 2¢ higher than Trans-Canada at the time the offers were made and the price arrangements were made. I know that there is in this record that since then Trans-Canada has offered higher prices than their original prices.

Q. In looking at Exhibit 4 there is a rather startling drop in the supply from U.S. source in the year 1961. One conclusion that you could reach from that is that 1961 is the year in which you project a supply under the Alberta

Southern contract becoming available and the large decrease in the supply from U.S. source could then easily be related to an assumption that the price from the Alberta Southern contract was a great deal lower than the price from the U.S. source, thus giving rise to that tremendous drop. Now, is that a fair assumption?

MR. CORETTE: It is not, Mr. Patterson. It would be a completely incorrect assumption. The reason for the drop in supply from U.S. sources is entirely due to the gradual depletion of this source, and to the fact that until some other source of gas is available, that they are being drawn upon heavily. The fact is that the U.S. sources will be exhausted in their entirety at this rate of withdrawal prior to the time of deliveries from Alberta and Southern and the present contracts completed. And the other fact: the gas we buy from Alberta and Southern will be, by far, the highest price gas ever placed into our system; so, in fact, we are replacing low-cost gas and taking higher-priced gas from Southern and Alberta, but it is controlled entirely by the production and deliverability of the various fields involved.

THE ACTING CHAIRMAN: Mr. Frawley has a few questions to ask you.

MR. FRAWLEY: Thank you, Mr. Chairman.

Q. Mr. Corette, would you take this Exhibit C-28-2-B which is the price delivered into the transmission system of Pakowki Lake gas. When you say delivered into the transmission system -- where is that?

MR. CORETTE: I could show you that on the map very quickly. The transmission line extends from the border to the Pendant d'Oreille field and is owned by Canadian-Montana Pipe Line Company, and that Exhibit, C-28-2-B is the place at the point where the gas is delivered into the transmission line of Canadian-Montana Pipe Line Company.

Q. By Canadian-Montana Pipe Line?

A. Yes.

Q. Well, it is not a strictly border price?

MR. CORETTE: It is not.

Q. Have you worked out a border price?

MR. CORETTE: Yes, we have worked out a border price. It would be 1¢ higher than the price shown in Exhibit C-28-2-B.

Q. Then, in short, your border price in 1958 would be 13¢ plus 1¢?

MR. CORETTE: Yes.

Q. Would you please indulge me by going back and making a breakdown. I know you did it before but I did not quite get it. That 13¢ starts at 8¢ at the wellhead? And then it is 4.84¢ for gathering?

MR. CORETTE: Yes, we have used 5¢ for gathering.

Q. But you did give a figure of 4.84¢? You call that 5¢, do you?

MR. CORETTE: I said the mathematical calculation at exactly a 7 1/2 per cent return worked out at 4.84¢ and we rounded the figure off at 5¢.

Q. You do the gathering, yourself, that is why?

MR. CORETTE: That is correct.

Q. And that is 13¢ there?

MR. CORETTE: Yes.

Q. And then you add .90¢ for transmission. You gave that figure. What was that?

MR. CORETTE: That is the exact cost of transmission on a 7 1/2 per cent return, which we rounded off at 1¢.

Q. That is to get it to the Alberta-Montana line?

MR. CORETTE: Yes, to get it to the border.

I might say that border price is naturally controlled by the wellhead price in the field and the actual cost of gathering and transmission. Gathering includes, of course, dehydration, any purification that is necessary, compression and anything else related, and the cost is high in that area because of the fact that the wells are scattered out over a very considerable distance, the deliverability of the wells is small, the gathering lines are long and these are the actual costs I have given you based on our actual costs of operation and our actual investment in the facility.

Q. This is a dry gas, is it, at Pakowki?

MR. CORETTE: Yes.

Q. A dry sweet gas?

MR. CORETTE: Yes. Some of it is not sweet gas in that general area, but most of it is sweet gas. We do consider it to be a dry gas. We have to do some dehydrating but we don't extract LPG's.

Q. Now, let us go to what you expect to pay Alberta and Southern when you start to buy from them, the 24.76¢ at the border.

MR. CORETTE: Yes.

Q. That, of course, is gas which has received a good deal of transportation before it arrives at that point?

MR. CORETTE: Yes, it has received several hundred miles of transportation.

Q. Do you regard that as explaining the very considerable difference between 14¢ and 24 3/4¢?

MR. CORETTE: Yes, I regard it as completely explaining the difference, because the prices being paid by Alberta and Southern for that gas and deliveries into the transmission line are already in the record here, and a comparison of those prices with the cost of gas delivered into the transmission line at the Pakowki Lake area will show that they are quite comparable, so that, as a matter of fact, the cost to Alberta and Southern, delivered into the transmission line, and the cost to Canadian-Montana Pipe Line delivered into the transmission line are quite comparable, and the difference in border price is due almost entirely to the difference in the length of transmission and in the transmission costs.

Q. Well, really, simply, you are in the position of having some 25¢ gas and some 14¢ gas

and you will have to pool those and put them into your system and sell them?

MR. CORETTE: That is correct.

Q. And, while, again, we are talking about price, you produce and you purchase in Montana, do you?

MR. CORETTE: Yes.

Q. From what particular fields do you purchase? Cut Bank field, do you purchase there?

MR. CORETTE: We produce most of the gas in the Cut Bank field. I think a very small amount of gas is purchased there. I would say we produce in excess of 95 per cent of the gas.

Q. Then we have only 5 per cent to talk about. What do you pay for it?

MR. CORETTE: In the Cut Bank field we pay 6 1/2¢ at the wellhead.

Q. What do you pay in the Whitlash field?

MR. CORETTE: Perhaps I can summarize it this way, by saying that in all of these fields in Northern Montana we pay 6 1/2¢, with a few exceptions, and the exceptions are 5¢, and the only other price we pay in that area is for sour gas that has to be treated, and we have a few small contracts of that nature at lower prices; but 5 to 6 1/2¢ are the standard prices in that field, and I would say 6 1/2¢ is more standard than the 5.

Q. What do you pay down in the southern part of Montana for what you purchase from the Montana-Dakota Utility Company?

MR. CORETTE: We pay to the Montana-Dakota Utility Company 16¢, but that gas is under very different circumstances. It is produced in Wyoming, it is gathered and put through a processing plant and then transmitted a distance of about 70 to 75 miles into Montana, so that price involves all the production, gathering, processing, transmission costs for 75 miles, and I know, from my connection with that whole transaction, that the price of that gas in Wyoming at the outlet of the processing plant was 10¢ and that an additional cost from 10¢ to 16¢ was a transmission cost of Montana-Dakota Utility, figured on a straight utility formula.

Q. What do you pay in the Clark Fork field?

MR. CORETTE: We pay 9 1/2¢.

Q. And what accounts for the difference between 9 1/2¢ in the southern part of the State and 6 1/2¢ up at Cut Bank?

MR. STADLER: That price is actually a base price of 7 1/2¢ on that contract. There is a 2¢ premium or bonus paid if the gas is produced at an agreed load factor through our winter priod. The gas is delivered to us at a central point, de-

hydrated, at not less than 650 pounds.

MR. CORETTE: In other words, it is not a wellhead price.

Q. All right. Now, I think that is enough for gas price comparison.

Now I want to take you to your comparison of residential consumption prices in Alberta and Montana, because I don't think I got them quite clearly. You say that in Alberta, for an average consumption of 15 MCF per month, that Alberta would pay 5.88 and that in Montana they would pay 9.56, is that correct?

MR. CORETTE: Yes.

Q. Now, when you went to the commercial consumption, the consumption where you are 115 per cent higher than in Calgary, what are the two figures?

MR. CORETTE: The two figures are that Montana Power's rate, for 75 MCF, would be $46.16, and the rate in Calgary would be $21.48, so our customers pay 115 per cent more than similar customers in Calgary.

Q. Do you find that the producers you are paying 8¢ in the Pakowki field, with the escalation of 1/4¢ per annum, are satisfied with that price?

MR. CORETTE: I believe so.

Maybe Mr. Stadler should answer it. He is

the one who conducted those negotiations directly.

MR. STADLER: There were three producers involved, Canso, U.S. Smélting and New British Dominion. I think it is fair to say that Canso and U.S. said they would like to have more money. New British Dominion said they thought it was a fair agreement.

Q. Now, your plans for future development in Alberta that Mr. Patterson was discussing with you, I suppose, being realistic about them, it would depend upon whether your Federal permit is extended?

MR. CORETTE: That is absolutely true, Mr. Frawley. The short-term Federal permit has been a constant source of difficulty to us, because, naturally, it affects planning, it affects development, it has delayed the construction of certain gathering lines in the field, it has affected our development and the development of others in the area all adversely because you just cannot plan on 5 years, or what is left of 5 years, so it does have a serious effect.

In addition, it has had a serious effect in Montana, making it impossible to make contracts for the consumption of gas beyond 1960, and the purchasers in the field have beaten us down somewhat on price by reason of the fact that we could not give them assurance on price beyond that time.

I feel Alberta and that part of the Province has also suffered quite seriously by reason of the limitation.

Q. I was struck by Mr. Patterson calling to your attention the evidence given by a Mr. Caples, is it ---

MR. CORETTE: Yes.

Q. -- of the Anaconda Company, in Washington before the Federal Power Commission in 1954. Would it be fair to ask you what Mr. Caples' object was in endeavouring to show that other fuels were much more expensive than gas?

MR. CORETTE: He was showing the great importance to the Anaconda Company of having Canadian gas and we were making an absolute complete disclosure of the situation and showing just why Canadian gas was important in Montana.

We did not at that time predict, because negotiations at that time had not been completed, what future prices would be, and I think I feel rather guilty about some of the criticism I have read in Alberta papers in that I do not believe we have kept the public and even the public officials in Alberta, and the newspaper people, informed about this increase in price, and we feel that an increase of 108 per cent to the Anaconda Company is a perfectly enormous increase, and about all you can possibly push on any one customer over a period of 4 or 5

years.

Q. Now, Mr. Corette, I want to discuss with you for a few minutes the matter of regulation. To what extent are you regulated by the Federal Power Commission?

MR. CORETTE: In our electric business we are regulated as to our many hydro plants, about twelve of them. We are regulated as to our accounting; we are regulated as to our sales of electricity across State lines.

In the natural gas business -- we are not a natural gas company and we are not subject to the Natural Gas Act except that we are required to obtain from the Federal Power Commission a certificate giving us permission to import gas under, I believe it is, Section 3 of the Natural Gas Act.

However, in our purchase from Montana-Dakota Utilities Company at Warren, that transaction was subject to the jurisdiction of the Federal Power Commission because of its jurisdiction over the Montana-Dakota Utilities.

Q. Did the Federal Power Commission have to approve the price you were paying the Montana-Dakota Utilities?

MR. CORETTE: I would have to put it the other way. It would have to approve the price at which Montana-Dakota was selling to us.

Q. And in in-state matters, you are

regulated by Montana Public Utility Commission?

MR. CORETTE: Completely. We are regulated completely as to both rates, service and accounting, an absolute regulation as to both gas and electricity.

Q. Does that extend to the gas purchase contracts, as to the fields where you buy gas?

MR. CORETTE: It does not. The Commission does not exercise jurisdiction over the price we pay for gas in the field when we buy from an independent. It has never questioned that price in any way.

Q. Is that the way your company would like to have it remain, that you would have no State regulation of your gas purchase contract price?

MR. CORETTE: It definitely is. We think those should be negotiated in the ordinary, arm's length bargaining competitive manner.

Q. Has the Federal Power Commission made any attempt to regulate your gas purchase contracts?

MR. CORETTE: Not ours because we are not a natural gas company and consequently would not come under the FPC.

Q. When you say you are not a natural gas company you mean within the meaning of the Natural Gas Act?

MR. CORETTE: Exactly.

Q. Does the question arise anywhere with the communities very close to the gas fields who desire to have a lower price than the price which you charge elsewhere to those who are further away from the field?

MR. CORETTE: We have had no problem of that nature. Our entire State regulatory system historically is committed to what they call uniform rate, and in our electric operations we sell at exactly the same rate to all customers in the same classification without regard to how close or how far it is from the power plant. In the

gas business we do not have any uniform rate because at the end of 1954 we purchased from Montana-Dakota Utilities Company their gas reserves and transmission lines and some distribution north of Great Falls, Montana, and they had several different rates in that area and we have never gotten those onto the uniform rate. The Commission has been after us to do that and we are working on it.

One exception I should give you, and that is Cutbank, Montana, which is in the heart of the field and Shelby, Montana. In those two areas there is definitely a feeling that they should have a lower rate than elsewhere in Montana.

Q. It was just such spots as Cutbank I was thinking of but at the moment the consumers of gas in Cutbank pay exactly what they pay elsewhere in the State?

MR. CORETTE: No, they do not. We do not serve Cutbank.

Q. You do not?

MR. CORETTE: No.

Q. You do serve a utility which serves Cutbank?

MR. CORETTE: We have what you might call a standby contract with them and in the future we will be supplying some gas but they

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

have their own production. This year and all past years they supplied most of their requirements from their own production.

Q. This Anaconda Copper Company, is that the correct name?

MR. CORETTE: It is just the Anaconda Company.

Q. Does it control the Montana Power Corporation?

MR. CORETTE: No, it has no relationship with us at all except that of a purchaser of the products we sell.

Q. That company does not own your company nor does your company own Anaconda?

MR. CORETTE: That is right. I can say from my own knowledge that neither company has a single share of stock in the other company.

THE ACTING CHAIRMAN: Mr. Britnell?

MR. COMMISSIONER BRITNELL: Does your statement given in answer to the question of Mr.. Patterson earlier that no one individual or company probably holds more than one per cent or two per cent of the total stock hold for the voting stock taken separately?

MR. CORETTE: Yes, it does. As a matter of fact I was thinking only of the voting stock.

MR. COMMISSIONER BRITNELL: There are

two other points I would be very appreciative if you would either verify or correct my arithmetic on. I should like to refer to Exhibit No. 4 and with it the answer to another question with respect to the total volume of gas taken by the Anaconda Company. Is it fair to assume that the Anaconda Company presently take and is expected to continue to take about one-third of the total annual market supply of all gas available to your company?

MR. CORETTE: It is fair to assume that it takes that now and will continue for a very short time but our experience is that Anaconda's load does not grow as rapidly as the ordinary cities that we serve. Secondly, over a period of time Anaconda takes a constantly decreasing percentage of the total sales.

MR. COMMISSIONER BRITNELL: That is the one you project at 1965?

MR. CORETTE: Yes. If we projected here up to 1961 there would be a constantly declining percentage going to Anaconda up to 1961, and if Anaconda in 1961 does put into operation the new properties that it is contemplating then temporarily there would be an increase again and it would start to decrease again in percentage of the total.

MR. COMMISSIONER BRITNELL: That is, at 1965 it would be just about exactly one-third?

MR. CORETTE: Yes.

MR. COMMISSIONER BRITNELL: From then on it would taper off?

MR. CORETTE: That is right, yes. That has been our experience in the past.

MR. COMMISSIONER BRITNELL: Now, just one more question and it relates to the same general area: is it fair to assume that the amount or proportion of your total gas supplies from Canada is about equal to the amount you supply to Anaconda and the possible supplies which you may expect to get from the future apart from the Alberta and Southern contract? Would it be just about the amount which you would expect to supply to Anaconda?

MR. CORETTE: It is true that in 1957 our supplies to Anaconda, for delivery to Anaconda, exceeded only slightly the gas we took from Canada. In 1958, 1959 and 1960 there will be withdrawals from the Pakowki Lake area which will very materially exceed what we deliver to Anaconda and thereafter for at least a few years the Pakowki area will be supplying approximately the same amount we deliver to Anaconda. I should say this to you, under the regulation by the Montana Public Service Commission, Anaconda and large industrial customers are at the bottom of the totem pole. The Commission insists that all gas supplies be first dedicated to

residential and commercial customers so we look to this Canadian gas as primarily being for our residential and commercial customers. It is for all our customers, of course, and we would naturally like to continue to supply our industrial customers for two reasons: first, it is vitally important to them and the second is, a gas company that had a commercial and residential load only would have an uneconomic situation, the load factor would be so low that the rate would be enormously high and it would be a very serious financial situation.

THE ACTING CHAIRMAN: Mr. Ladner?

MR. COMMISSIONER LADNER: I also have one question: did your company contemplate or have in view extensions west of Montana?

MR. CORETTE: We do not, sir.

MR. COMMISSIONER LADNER: You have no relationship so far as that westerly course is concerned with the Pacific Gas and Electric?

MR. CORETTE: We have not. I might further add that we contemplate in Montana no major extensions of any kind, that there are only two or three communities in Montana that are not served with gas and if we did extend to those it would just be a fraction of our total gas business, so that the principal growth will be merely the growth which is experienced in the communities in Montana which are now already

served with gas.

THE ACTING CHAIRMAN: Mr. Howland?

MR. COMMISSIONER HOWLAND: I have a few small questions. What proportion of your present take of gas from Canada did you purchase through your subsidiary?

MR. CORETTE: We have purchased all of it up until January of this year and in January of this year we first started taking deliveries from the two other companies which I mentioned.

MR. COMMISSIONER HOWLAND: So it was wholly within the company bookkeeping what price you charged for your gas?

MR. CORETTE: Yes.

MR. COMMISSIONER HOWLAND: You mentioned that subsequent to 1954 the railways had gone out of the steam locomotive into diesel engines?

MR. CORETTE: It has been a gradual process, Norther Pacific has been going to diesel for at least the six or eight years to where now they have completely gone to diesel and I believe are not producing any coal from their large coal strip operation or if any it is down to a point where it is no longer practical or economically feasible to do it.

MR. COMMISSIONER HOWLAND: What I am interested in is, you still plan, according to your projections here, to sell a great deal of gas

to Anaconda?

MR. CORETTE: We plan and hope to supply their total requirements.

MR. COMMISSIONER HOWLAND: I am trying to understand why you do that when coal is $1 a ton at 11,500 B.T.U. Do they have to have gas? Could they not use coal?

MR. CORETTE: They could use coal. I should correct one thing you said. This coal strip is not 11,500 B.T.U., it is about 9,000 B.T.U.

MR. COMMISSIONER HOWLAND: It is a little better than lignite, then?

MR. CORETTE: Yes, and it would cost when the freight was added something more than gas to Anaconda at 26 cents, but there is another major and important reason and that is, Anaconda for thirty years has used gas at its smelters, refineries and mine heating plants and all the facilities are designed for the use of gas, and if you tore those out and went to coal it would be a very great change in the operation and in the physical situation in the plant. I have no idea what that would cost but certainly from the standpoint of space and accommodation and everything else it would be a major change.

MR. COMMISSIONER HOWLAND: I understand that, but where is this coal in relation to Anaconda?

MR. CORETTE: It is at Colstrip, Montana, near Forsyth, Montana, which is roughly 300 miles from Anaconda's operations in Butte and East Helena.

MR. COMMISSIONER HOWLAND: The $1 per ton is at the pit?

MR.CORETTE: Yes.

MR. COMMISSIONER HOWLAND: What does it cost to Anaconda? I am a little confused. I thought the competitive price to Anaconda for gas and coal was to be determined at $1 a ton. That is not $1 a ton to Anaconda, is it?

MR. CORETTE: No. In the figures I gave you where I arrived at a difference of about 17/100ths of one cent, I added in the freight to the point where coal would be actually used. I added something over $4 per ton in freight.

MR. COMMISSIONER HOWLAND: This would be about $5 coal?

MR. CORETTE: Yes, it would be a little over $5 coal.

MR. COMMISSIONER HOWLAND: 9,000 B.T.U. is expensive coal, at least in Alberta terms.

MR. CORETTE: Well, it just costs that much compared to what we had before, $4.80 at the minehead.

MR. COMMISSIONER HOWLAND: What I was going to ask you was this: if the other figures were the way I understood them, how can you take 14¢ gas from the Canadian border or 24¢ gas under the Alberta and Southern contract, take it down and still meet the competition of $1 a ton? I can understand why you can meet the 5,900 B.T.U., which is very different.

MR. CORETTE: If I have confused you, Mr. Howland, I am very sorry. I thought I was very specific in talking about $1 a ton at the mine. We take gas under our present-day cost and sell it to Anaconda at 26¢ and still do it at something less than the cost of that coal delivered to Anaconda, which would be in the neighbourhood of $5.50 a ton.

MR. COMMISSIONER HOWLAND: Perhaps you will work that out for us when you give us the chart?

MR. CORETTE: It will be on the table which I will present.

In 1961 when we get Alberta and Southern gas at 24¢, it will require an adjustment in our rates to Anaconda as well as to other customers, and how it will compare to the coal situation, I just do not know. It will depend on so many elements. It will mean that Alberta and Southern gas will have to be mixed in with all our other gas

from Canada and Montana and we will have to have an average price on it. We are going to try and keep that Anaconda business because it is vitally important to our other customers that we do keep it, but we have made no studies as to what the comparative cost would be in this.

MR. COMMISSIONER HOWLAND: Just one small question, carrying on from what my colleague, Dr. Britnell, was asking you: by implication is there any extension intent of the contract period? That, effectively, would have to carry on for quite a long time because you are building up a much greater proportion of your total from Canada and, consequently, the portion you forecast for Anaconda remains fairly constant and is a big factor for the industrial portion.

MR. CORETTE: I am not sure I understand your question.

MR. COMMISSIONER HOWLAND: I believe this contract you have for export terminates within a year or two?

MR. CORETTE: 1960.

MR. COMMISSIONER HOWLAND: Effectively, under your figures, it is renewed, which amounts to a renewal for a fairly considerable period because you are building up a greater dependence on Canada in the future than you have had in the past?

MR. CORETTE: I would say we are constantly becoming more dependent on Canada by reason of the physical facts of the situation.

MR. COMMISSIONER HOWLAND: One other question: this is just an explanation in my mind as I was listening to your fine presentation to us this morning. I see that two-thirds of your business is the generation of electricity.

MR. CORETTE: Yes.

MR. COMMISSIONER HOWLAND: Have you ever looked at the economics of generating electricity at your gasfield and shipping your electricity across the border? I know we have a one-year permit on that but assume that that is not there; is it sound, economically, would it be, for you to generate power this side of the border and send it across, or are the economics unsound?

MR. CORETTE: The economics would depend entirely on the cost of fuel at each steam plant and on the cost of transmission to your market centre.

MR. COMMISSIONER HOWLAND: I realize that it is pithead power versus location at the market. I just would be very interested if you ever got around to thinking about that to see what the evidence would be.

MR. CORETTE: This might interest you: there was a source that studied the problem of

developing electricity from coal in the Crowsnest Pass area and Fernie area. They contacted companies in the United States and their plan was to develop electricity here. As my recollection is, the economics did not show the price was quite as low as if the power was generated in the United States. It is, actually, a question of fuel price and transmission costs. It is easy to conceive conditions where economics might justify developing the electricity in Canada and transmitting it to the United States. So far, no plan has been developed.

MR. COMMISSIONER HOWLAND: You have not studied that?

MR. CORETTE: No, and I do not know of any except these companies who based their study on using coal in Canada.

THE ACTING CHAIRMAN: Mr. Corette, we wish to express our thanks to you and your associates for presenting this brief. Next week we will have more time and we will study it and we will file it with the other briefs.

Gentlemen, this brings to a close our hearings in Calgary. We have been here exactly four weeks this afternoon.

When we are at our homes in the East, we speak about millions, but here we learned about billions and trillions and the way this Province

is going ahead, I would not surprised, on our next trip, that we will have to increase the word trillion to google. This is a figure with one hundred noughts and, according to our economists, it is recognized mathematics.

On behalf of our Commission I wish to express our sincere thanks to the authorities that have put this auditorium at our disposal.

We have felt at home in Calgary and, personally, I have been much impressed to see so many people coming from the Maritime Provinces.

What will come out of this Commission, we do not yet know, but we expect something good. We are beginning to realize we are, probably, five years late when we read in the paper that there is legislation existing in other countries that does not exist in Canada.

To the oil and gas people I think we can say, remain optimistic. I always tell the people in my office that it is better to be optimistic and be wrong than be pessimistic and be right.

To the people of the press we wish to express our thanks.

When we are asked by the Prime Minister to be part of this Commission, no matter what our politics are, it is our duty to accept the expression of confidence in so important a matter right now.

We will be back in Calgary around the

29th of April if it is agreeable. We are all working on this together, and I, myself, had to cancel my trip down south.

For now we will just say au revoir.

---Whereupon the hearings were adjourned at 12.40 p.m.

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Mr Berk...

ROYAL COMMISSION

ON

ENERGY

HEARINGS

HELD AT

REGINA

SASK.

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ROYAL COMMISSION
ON
ENERGY

Hearings held at Regina, commencing Monday, April 14, 1958, at 10.00 a.m.

PRESENT:

Mr. H. Borden, C.M.G., Q.C.	--	Chairman
Mr. J.L. Levesque	--	Member
Mr. G.E. Britnell	--	Member
Dr. R.D. Howland	--	Member
Mr. L.J. Ladner, Q.C.	--	Member
Dr. R.M. Hardy	--	Member

COMMISSION COUNSEL:

Mr. A.S. Pattillo, Q.C.

Mr. Miles H. Patterson.

Mr. J.F. Parkinson	--	Secretary to the Commission.
Major N. Lafrance	--	Assistant Secretary to the Commission

APPEARANCES:

Hon. J.H. Brockelbank	- Minister of Mineral Resources.
Hon. R. Brown	- Minister in Charge of Power Corporation.
Mr. J.G. Gebhard	- Appearing on behalf of the Government of Saskatchewan.
Mr. A.J. Williams	- Division of Petroleum and Natural Gas.
Mr. Davis Cass-Beggs	- General Manager, Power Corporation.
Mr. D.H.F Black	- Director of the Industrial Development Office.

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EXHIBITS

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Monday,
April 14, 1958

THE CHAIRMAN: Good morning, everybody; before we open the hearings of the Commission in Regina, on behalf of the Commission I want to say how happy we are to be in this beautiful Province of Saskatchewan in this City of Regina, and if your weather is like this all the year round I think it would be a very good idea if we stayed here. We are very happy to be here.

I understand the Hon. J.H. Brockelbank, Minister of Mineral Resources, would like to say a word.

MR. BROCKELBANK: Thank you, Mr.Chairman and Commissioners. The weather which we regard very favourably at the moment, I might just mention that this is the week the Provincial Government is running the weather.

First of all, I want to express the regrets of the Premier that he cannot be here to bid the Commission welcome. The Premier and the Provincial Treasurer, Mr. Fines, are both in Eastern Canada just in case they find any dams or northern roads or substantial amounts of money that are not nailed down. I am sure we all wish them success, but they being away, it is my good fortune to have the privilege of welcoming you to Saskatchewan and to our capital city. We can certainly say we are giving you our warmest Prairie welcome. I am sure that Saskatchewan and our people, too, appreciate the opportunity to speak about the problems which are provincial and national before such an important forum as this Royal Commission on Energy.

We have had in Canada, for a good many

years now, a Dominion Coal Board, and many people are well acquainted with the activities of that Board. It is not an authority to invade Provincial rights or Provincial fields; it is to look at the whole national picture and to recommend national policies. Coal, of course, is an important part of our energy sources, but it is still only a part. I am of the opinion that the national interests in our energy sources should be known.

So we appreciate very much this step in that direction. I think that all Provinces would want to have before them a picture of the national interest when they devise their policies. Any national energy organization, of course, should have the power to override Provincial jurisdiction, and I do not think such power is necessary in any sense of the word, but national policies, undoubtedly, should be designed to create incentives by various means. This, I think, should be sufficient.

This presentation at this time is confined to oil and natural gas. I just want to point out that we do have in our Province other energy sources; a very substantial amount of coal; we have substantial uranium reserves, uranium ores in this Province and, of course, we do have some waterpower, but we are not as greatly blessed as some Provinces in that respect, but still we do have some of it.

Now, our presentation to you today is not a short one. We considered it necessary to put the whole story together regarding the administration of these energy resources, their management and their conservation and uses. We have endeavoured

to put it altogether in such a form as will be most useful to your Commission. Certainly we present it with the greatest sincerity. We will certainly welcome any questions and supplementary discussions as we go along.

Our brief is composed of an introduction and three parts. The introduction is comparatively short. Part 1 deals with petroleum development and is quite lengthy; part 2 deals with transport and marketing; the third, with natural gas distribution and supply.

I think, Mr. Chairman, that is all I have to say at the present, except to repeat our pleasure at having you with us on this occasion, and to hope that your sojourn here in Regina will be both pleasant and profitable.

Thank you very much.

THE CHAIRMAN: Thank you very much, Mr. Minister.

Gentlemen, I do not think it will be necessary for us at the commencement of this hearing to read the Terms of Reference to the Commission that we read at the opening of the hearings in Calgary in February and are on the transcript. I think you would agree with that, sir, from the point of view of the Government that you do not desire us to put that on the record again.

Mr. Patterson, I think, possibly, you might ascertain what counsel are here and whom they represent, and outline the procedure that we propose to follow in connection with the hearing today.

[illegible]

MR. PATTERSON: Thank you, Mr. Chairman.

We propose, in connection with the hearing today, in dealing with the Saskatchewan brief, to follow the procedure of asking Mr. Brockelbank to read the introduction, and then we are going to take the brief as read to page 36.

Previously we did not do that, mainly because there was so little time for the Commission to have the opportunity to read the briefs, but we have now had an opportunity to do so and as the brief is being read, we propose, if I feel I would like to ask a question and engender some discussion with Mr. Brockelbank, to carry on that way and, perhaps, interrupt the reading of the brief and the Commissioners will do the same as the brief is being read.

Then, of course, at the end of the reading of the brief if there are some matters on which we would like further explanation, we understand there are many of the technical people here who can assist us with these problems.

I think this is a sufficient explanation of our intention, so far as handling this brief is concerned.

Before we call on Mr. Brockelbank to read, I would appreciate it if counsel who are here would rise and give their names and the names of the persons for whom they are appearing.

Will you start, Mr. Gebhard?

MR. GEBHARD: My name is J.E. Gebhard. I am appearing on behalf of the Government of Saskatchewan.

MR. TYREMAIN: My name is D.M. Tyremain.

Mr. A. McPherson who, unfortunately, is not able to be here today, but will be here tomorrow, will be associated with me, and we will represent the Saskatchewan Division of the Canadian Petroleum Association Producers and Westpur Pipeline, who have a brief together, and Tidewater Oil Company.

Thank you very much.

THE CHAIRMAN: Are there any other counsel present?

MR. MOFFAT: My name is Robert E. Moffat, representing the Province of Manitoba here today on a watching brief and to get some insight as to your procedures to be applied when you arrive in Winnipeg, and with me is Mr. Keyes and Mr. Nelson.

THE CHAIRMAN: Thank you very much, Mr. Moffat. That is fair enough.

MR. GANNE: My name is L.G. Ganne, representing the Saskatchewan Power Corporation.

THE CHAIRMAN: Are there any other counsel?

MR. MATHIESON: My name is D.L. Mathieson. Mr. Chairman, do you wish the name of counsel who are not formally appearing?

THE CHAIRMAN: Only those who are appearing formally or acting by way of a watching brief or otherwise, although we are not too concerned with those who are on a watching brief.

MR. MATHIESON: However, I will give my name. It is D.L. Mathieson of the Interprovincial Pipeline.

MR. PATTERSON: If there are no further counsel, I might explain our method of marking exhibits and ask for the marking of the first brief.

We propose to use the system of the initial of the city, in this case "R", the date, and then the number of the exhibit as they come in from day to day, and I would, therefore, ask Mr. Belanger, as clerk, to mark as Exhibit R-14-1 the brief of the Government of the Province of Saskatchewan, and there are a number of appendices with that brief referred to throughout the brief and listed in the table of contents, and I suggest, since we have all of those that, rather than stop during the reading, as they are referred to that we simply request them to be put in as appendices to R-14-1.

THE CHAIRMAN: In other words, they will not be different Exhibits, they will be part of R-14-1.

Mr. Minister, would you like to proceed:

MR. GEBHARD: Mr. Chairman, before the Minister proceeds, we have a few small minor changes to Exhibit R-14-1. We have prepared a small notice, and we would like to give a copy of that to the Commissioners to file.

THE CHAIRMAN: I suppose it should go in as Exhibit R-14-2, if you will file it with Mr. Belanger. Do you have extra copies?

MR. GEBHARD: Yes, we do have.

Submission of

THE GOVERNMENT OF SASKATCHEWAN

APPEARANCES:

Hon. J.H. Brockelbank	-	Minister of Mineral Resources.
Hon. R. Brown	-	Minister in Charge of Power Corporation.
Mr. J.G. Gebhard	-	Appearing on behalf of the Government of Saskatchewan.
Mr. A.J. Williams	-	Division of Petroleum and Natural Gas.
Mr. Davis Cass-Beggs	-	General Manager, Power Corporation.
Mr. D H.F. Black	-	Director of the Industrial Development Office.

- - - -

MR. BROCKELBANK: Policies relating to the production, distribution and consumption of energy are of strategic importance to the economic development of Canada as a whole and, particularly to the balanced growth of regional economies within Canada.

It is inconceivable, of course, that the second of these conditions -- that is, balanced regional development -- can be achieved without a satisfactory rate of progress nationally. For the parts to grow and prosper necessarily implies total growth and prosperity. It is possible, however, to maintain an apparently adequate rate of growth in terms of national averages without at the same time lessening regional disparities. Comparisons of per capita personal income by provinces over the past quarter century indicate that this has, indeed, been the course of development in Canada. In the period 1929-34, per capita incomes by provinces ranged from 27 per cent above to 48 per cent below the national average. Over the succeeding two decades the national average income per capita rose sharply. Nevertheless, in the period 1950-54, per capital income in the least prosperous province was still 45 per cent below the national average while the highest province stood 20 per cent above. Despite a high rate of national economic expansion, therefore, it is quite conclusive that certain regions of Canada remain relatively underdeveloped.

In light of this, the well-established relationship between energy consumption and economic growth is significant. As pointed out by Davis in the report "Canadian Energy Prospects":

> With few exceptions, countries reporting a high per capita usage (of energy) are among the most productive. Putting energy to work intensively, they are also the ones enjoying the highest standard of living. Many of the world's fuel and power exporting regions, on the other hand, are well down the income scale. (Davis, John, Canadian Energy Prospects, Royal Commission on Canada's Economic Prospects, Queen's Printer, Ottawa, 1957, p. 1.)

Thus, if we are to consider the impact of energy policy on living standards, it is in the area of consumption and use that we must look first. As a nation, Canada stands relatively high, both in per capita income and in per capita use of energy. Indeed, Canada and the United States together, with little more than ten per cent of the population in the non-Communist world, account for over half of its total energy usage. Yet within Canada, as we have pointed out, wide regional disparities in per capita income persist. Moreover, the three provinces with highest per capita income -- Ontario, British Columbia, and Alberta -- are also the three highest in energy consumption per capita. Only one of these, Alberta, ranks high on the list of Canadian provinces as producers of energy. (Ibid, p. 44)

In matters of energy policy, then, Saskatchewan's primary interest is on the side of energy consumption. Here we are particularly concerned with the conditions under which energy is made available for use. Continuity of service, quality and, of course, price are critical determinants of consumption. In

this connection, it is significant to note that Canadians devote a relatively large share of their national income to the purchase of energy. To quote Davis once again:

> Few other countries spend more of their income on fuel and power. Total outlays on this account are presently in the order of 10 per cent of the nation's output of goods and services. The corresponding figure for the United States has for many years ranged between 6 and 7 per cent. The quantities of energy used in both countries are about the same per unit of Gross National Product. The difference therefore is primarily one of price. Even now consumers in this country are paying up to 50 per cent more for their energy than consumers in the United States. (Ibid, p. 1.)

There are some indications that this price disadvantage is decreasing, particularly in Western Canada. Nevertheless, Canadian geography and climate, as well as the distribution of our fuel and power resources, would indicate a price for energy which will continue relatively high for some time to come.

Demand for Energy in Saskatchewan

Present demand for energy in Saskatchewan is distributed among a wide range of applications. The more important include the following:

Space Heating. Saskatchewan's long and wind-chilled winters make space heating requirements universally high. Private homes, commercial and industrial establishments, and public institutions all require substantial quantities of fuel for heating purposes. For many years coal and wood supplied the

major portion of space heating requirements. Since World War II, however, oil and propane have captured an ever-increasing share of the space heating market. More recently, in many urban areas, natural gas has begun to supply a large part of this requirement.

Other Domestic Uses. One important indicator of improved levels of living is the greater use of energy in the home. Saskatchewan is still undergoing a major transition from coal, wood and kerosene to more efficient forms of fuel for cooking, lighting and other household tasks. The extension of electric power to nearly all urban residents and to a growing number of farm homes has undoubtedly been the most important single improvement in this field. Saskatchewan has lagged behind in the per capita domestic use of electric power, but the rate of increase in consumption is now at a relatively high level.

Farm Production. In no other area of Canada has power been applied to farming in as large a measure as in Saskatchewan. Among the province's industries, agriculture is the largest user of energy, primarily in the form of refined petroleum products. The broad level expanse of the prairie has proved ideally suited to large tractor driven units -- units which have multiplied the productivity of farm labour. Under the impact of mechanization, the average size of farm units in Saskatchewan had grown to over 600 acres by 1956.

While the increase in farm size has improved the efficiency of farm production it has complicated the provision of another important energy source to farms. At the end of World War II only a handful of farms were served by high line electric power. Because

of the widely scattered distribution of farm homes and their shrinking numbers, distribution costs per customer are extremely high. Despite the difficulties, more than 46,000 farm homes are now served by the Saskatchewan Power Corporation and the use of electric power in farm production is steadily growing. Nevertheless, the continuing high distribution cost emphasizes the need for low-cost power production at a number of widely separated points in the province.

Industrial production. Although agriculture is and will continue for many years to be the mainstay of Saskatchewan's economy, non-agricultural industry has been growing in importance since 1945. In the past few years the pace of industrial expansion has quickened. Oil and gas exploration and development, uranium, potash and other primary industries have expanded rapidly. Construction has continued at a high level. Secondary manufacturing and commercial expansion have tended to keep pace. In all, power demands for non-agricultural industry are increasing at a relatively rapid rate.

Transportation. In common with other Canadians, Saskatchewan residents are using more highway transportation each year. Improved incomes, better roads, and the extreme dispersal of population in the province are some of the more important factors here. Vehicle registrations have doubled since 1945, with the result that Saskatchewan now has one of the highest ratios of motor vehicles to population in Canada. Consequently, the province has experienced a steeply rising trend in the consumption of motor fuel and lubricants.

Taken together, these various trends indicate continuing rapid growth in the per capita. demand for energy in Saskatchewan. Combined with a projected population increase, they provide a basis for estimating future energy requirements. The following table, prepared in 1955, estimates the anticipated annual demand for energy of all types at ten year intervals over the period to 1985.

Year	Billions of BTU's
1955	153,000
1965	247,000
1975	389,000
1985	577,000

The total consumption of energy during the 30 year period on this basis would be 9,900,000 billion B.T.U's. (Prospects for Economic Growth in Saskatchewan, Submission by the Government of Saskatchewan to the Royal Commission on Canada's Economic Prospects, 1955, p. 77.)

Energy Sources

To what extent can Saskatchewan expect to meet these future requirements from its own energy resources? In the main, Saskatchewan is generously endowed with fossil and nuclear fuels. Lignite coal and petroleum occur over a considerable portion of the southern part of the Province. Natural gas fields have been tapped in the west and southwest, and gas is also associated with oil in some fields. Large uranium deposits are available in the far North. Few provinces at this time show more promise as producers of these fuels than Saskatchewan.

Unlike many Canadian regions, however, Saskatchewan is seriously deficient in cheap hydroelectric power. Not only are available sites few but

they are, for the most part, fairly remote from centres of population. Saskatchewan has felt this deficiency keenly, particularly because cheap electrical energy plays such an important role in extending the amenities of modern life to the province's consumers. We believe that any national energy policy directed towards balanced regional development must take into account the distribution of hydro-electric resources.

While Saskatchewan is primarily concerned with exploiting and conserving its energy resources in such a way that they may be efficiently utilized in meeting its own growing consumption needs, this does not imply a lack of concern for the province's position as an important producer and exporter of energy materials. Saskatchewan is now ranked fourth among the Canadian provinces as a producer of energy, and the coal, petroleum and uranium industries have come to occupy an exceptionally important place in the economy of this province. The larger part of the coal and crude oil output, and all of the uranium salts, must move to markets beyond the province. Consequently Saskatchewan has a vital interest in national policies which will help to enlarge these markets and generally to stimulate the further growth of its energy producing industries.

Scope of the Present Submission

It seems clear from its terms of reference that the Royal Commission on Energy is required to undertake a very broad assessment of all phases of energy supply and demand in Canada. The complexities of such a broad inquiry are self-evident. They are obviously intensified by the close interrelationships

between the various forms and various end uses of energy.

The Commission, however, has indicated to us that the initial stages of its investigations are being confined primarily to matters relating to petroleum and natural gas. The present submission, therefore, is similarly restricted, and is divided into three main parts. The first is concerned with the development of petroleum exploration, production and administration in Saskatchewan. The second has reference to the pipeline transportation and marketing of crude oil and to certain problems arising therefrom. The third covers questions relating to the distribution, demand for, and supply of natural gas.

It is understood that at a later date the Commission will give attention to other forms of energy. At that time the Government of Saskatchewan would propose to submit material specifically relating to coal, electric energy and radio-active minerals. It would also hope to submit observations on matters of general policy such as income tax incentives in facilitating Canadian mineral development, the question of a national energy authority, and the overall development of energy use and supply in Canada.

Thank you, Mr. Chairman.

THE CHAIRMAN: Thank you very much, Mr. Brockelbank. I wonder if this would not be a useful point at which to discuss for the moment the very last sentence. I think probably some of the fault lies on the shoulders of the Commission in that regard: we did ask the Province to submit primarily its views with respect to oil and natural gas. We would like to have as soon as you feel you can properly do so, sir, the Province's views with respect to the question of a National Energy Authority, and I am wondering - while I don't want to press you at all on it - whether as a matter of practical affairs and being realistic about it how much time would be required for the Province to put those views down on paper for us? Can you give us any idea on that? I think we must take some blame for this, Mr. Minister.

MR. GEBHARD: I believe it would take a little time, Mr. Chairman. One of the main reasons why no reference has been made to the proposed National Energy Authority is that it was believed by the Province that we would have to consider all forms of energy before we could really make any comment on this proposal.

THE CHAIRMAN: Let me define it for you: could the Province let us have its views with respect to a National Energy Authority, bearing in mind only at the moment, if you feel that all sources of energy should be brought into it, confining it for the time being to oil and natural gas. There is this specific reference to the Commission in the Order in Council under which the Commission is established dealing with the procedure -- and I am speaking from recollection now -- and administrative set-up of a National Energy Board - so-called. We have asked certain of those

who have already come before the Commission to let us have their views in writing with respect to any such regulation. That has applied to the natural gas and also we have asked the oil companies to do the same thing, and we will be having hearings -- and the Secretary will correct me if I am wrong on this - in Toronto starting early in July; we are going to the west coast and then to Calgary from Regina, and we have asked various interested bodies to give us their views not later than that time on that term of the reference to the Commission, dealing with the oil and natural gas only.

MR. BROCKELBANK: I think by that time certainly we could have our opinions expressed in writing for you. I don't think there would be any difficulty in that.

THE CHAIRMAN: I would hope not, Mr. Minister.

MR. BROCKELBANK: Probably earlier.

THE CHAIRMAN: Yes, if we could have them early in June?

MR. BROCKELBANK: Yes, I think so.

THE CHAIRMAN: I don't think we need to have any formal hearing, if it could be submitted in writing to the Secretary.

MR. GEBHARD: Very good.

THE CHAIRMAN: Mr. Minister, on page V, I was interested in your submission that, "We believe that any National Energy policy directed towards balanced regional development must take into account the distribution of hydro electric resources." - which, I assume, you mean throughout the provinces in Canada?

MR. BROCKELBANK: Yes.

THE CHAIRMAN: And I am wondering, behind that, what would you visualize, or how would you visualize that could be done having regard to the fact the provinces themselves have control of their own natural resources? What field is there for the Dominion Government in that?

MR. BROCKELBANK: Mr. Chairman, it is rather difficult to answer a question like this. I know we cannot move the hydro electric sources of power to make an even distribution of them across the country, but I think national policies could be devised to encourage the making available other sources of power in those areas where there was deficiency. We are not particularly speaking on our own behalf, because, as we have already stated, we have been fairly well blessed with power. One example that might be quoted that is actually taking place is the assistance in the Maritimes for the development of power there where the hydro sites were not easily developed, and helps to make up for a deficiency that might otherwise have existed. However, the only thing I could see at the moment is the possibility of incentives put into effect by the National Government to at least make it easy, or easier, shall we say, for sources of energy to be supplied in those areas of deficiency of hydro electric to make up for it.

THE CHAIRMAN: Do you confine it to a hydro electric?

MR. BROCKELBANK: No, I would not.

THE CHAIRMAN: By the same reason wouldn't

you say oil and gas and other sources of energy, with which Saskatchewan and western provinces are blessed, could be made available to the other provinces where they are deficient in that source of energy?

MR. BROCKELBANK: Yes, certainly, we are certainly very interested in supplying them.

THE CHAIRMAN: But I am just wondering how you can work out a national energy policy, and I am trying to get a little help for the Commission on that, when, surely, all the Dominion can do is to have some kind of advisory and co-operative jurisdiction; isn't that right? If Saskatchewan said, "We don't want to develop our gas or our oil", how can the national interest as distinct from the provincial interest be met?

MR. BROCKELBANK: I can hardly conceive of the province not wanting to develop its resources. I think an example of a national policy that did effect distribution of energy sources is the coal policy and the subvention on coal, which meant that Canadian coal to a much greater extent was used in central Canada. Incentives don't have to be in that form always - of a subvention or something like that. There are other ways - in assisting in transportation, and so forth.

THE CHAIRMAN: If the national interest called upon Saskatchewan oil going east, how would Saskatchewan feel about that when the major portion of its oil that leaves the Province goes down across the border? The price may not be the same. I don't know - I am trying to find out just exactly how a national energy policy can be worked out, looking towards balanced regional development, and

taking into account the poor and rich portions of the country in energy.

MR. BROCKELBANK: Of course, there has been a great deal done already to distribute power or energy.

THE CHAIRMAN: Oh, yes.

MR. BROCKELBANK: The Interprovincial Pipeline, for example, which takes oil from the west to eastern Canada, and now the Trans Canada Gas Pipeline.

THE CHAIRMAN: But you don't like the Trans Canada, according to the brief.

MR. BROCKELBANK: Oh, we like Trans Canada Pipeline.

THE CHAIRMAN: Or the price.

MR. BROCKELBANK: Let us not throw out the baby because there is a little something in the bath water.

MR. COMMISSIONER HARDY: Mr. Chairman, before we leave that point, I notice, Mr. Brockelbank, you use the term "incentive". You like to see incentive provided for better internal distribution; you use that word deliberately rather than "control"?

MR. BROCKELBANK: Yes, absolutely.

MR. COMMISSIONER HARDY: You accept incentive but not control?

MR. BROCKELBANK: Yes, I don't think it is going to be necessary, because the Canadian provinces - and I can certainly speak for ourselves here - certainly, we are Saskatchewan, but we are also part of Canada and we are interested in Canada, and if it comes to a question, we would much prefer on equal

terms to supply some of our goods to other parts of Canada for their benefit than to export them any place else. We have a national interest, and if the provinces have the national picture before them, and then, probably, where needed some incentives of various kinds, you can rely upon it that ---

MR. COMMISSIONER HARDY: Yes, but would you go so far as to say that you would market your energy in the same way you have to market your wheat?

MR. BROCKELBANK: I never thought of comparing those two.

MR. COMMISSIONER HARDY: I don't want to embarrass you at all.

MR. BROCKELBANK: No, but I wouldn't think the comparison would be very good.

THE CHAIRMAN: Well, just for diversification, somebody has suggested it will not be long before wheat is going from western Canada to the east by way of pipeline.

MR. BROCKELBANK: Probably, but mention was made of some of our oil resources, and crude oil has got to go to market where the products of that crude can be used, and so this market we are enjoying now in the north central States for some of our crude oil is a natural market where they can use or come close to using all of the products from that crude oil; that and distance, of course, are the factors that are very important.

THE CHAIRMAN: It is difficult, though, to visualize an incentive - to come back to Dr. Hardy's question - that does not involve monetary payment or consideration of some kind, isn't it?

MR. BROCKELBANK: Yes.

THE CHAIRMAN: When you get right down to it.

MR. BROCKELBANK: Yes, that is right; that is absolutely correct, but I also think it would be unfair to compel any province, in the national interest, to suffer a loss. National policies should be put into effect at the cost of the nation, not at the cost of any province.

THE CHAIRMAN: To come to that for a moment, if you had an export market for a source of energy and the price to be received was greater than could be received in some other part of Canada for the sale of that like product, would the national interest come ahead of the economic interest in such a case?

MR. BROCKELBANK: That would definitely be a question for the nation to decide and if the nation were willing to pay the price, all right.

THE CHAIRMAN: Well, there, I suppose, the practical answer is that the Dominion would have the last say in that any energy can only be exported out of the country on the issuance of a permit from the Federal Government. That would be the practical answer, would it not?

MR. BROCKELBANK: No, I would like to make a little reservation there, too, because we on the Prairies and in Saskatchewan in particular feel a little bit delicate about national policies in Canada. We have had national policies that have not been to our best interests, and that includes the effect that the national policy has had on our markets, both buying and selling, so we would certainly want to take a second look at that one.

THE CHAIRMAN: But is that not the situation, Mr. Minister, that you take your source of energy, whether oil or gas or electricity, and it can only go out of the country, in the final analysis, with an export permit issued not merely by the Province but also by the Federal Government, so it does have that restriction?

MR. BROCKELBANK: Well, let us put it this way, that if the permission to export our medium crudes, medium sour crudes, to the Minneapolis area was withheld and there was no other market available as good, we would certainly be inclined to raise some noise about it.

THE CHAIRMAN: You mean from the point of view of price?

MR. BROCKELBANK: Quantity and price.

THE CHAIRMAN: Certainly. Then you would be against a two-price system, one price for domestic and one price for export, is that so?

MR. BROCKELBANK: Well, I am not against anything, provided that we get a fair deal out of it.

THE CHAIRMAN: All those factors come into the export problem, you see, and there is your problem of raising the price to the local consumer at the expense of the export, that the greater demand created by the export increases the price within the Province, and the local consumer has either got to be subsidized in some way or pay a higher price. Is that not right?

MR. BROCKELBANK: Right; but in oil, actually, the world market, after the construction of the interprovincial pipeline, that puts down the price of the oil to the local consumers, because we met a world market in Sarnia and then the price was worked back to the West from that.

THE CHAIRMAN: But if that market could be enlarged for Saskatchewan oil, with a slightly less price to the producer in Saskatchewan, would that be against the national interest?

MR. BROCKELBANK: Well, I don't know that it would be against the national interest; it might be against the producers' interest. It would depend on how much increased market and how much reduction in the price. It would be a matter to haggle about.

MR. COMMISSIONER HARDY: Mr. Chairman, I wonder if I might follow that up with another form of energy and, with this policy, I do not see how Saskatchewan could lose very well. Province A, say, has an excess of hydro power. There is a foreign market for it, but national policy (and this has been so, up to the present time; there is that policy with respect to the export of power) -- by so doing, that might make that power available for use in Province B, such as Saskatchewan, but that would be done by control and it is being done by control now in some forms of energy.

Would you still say that the proper policy there is that it should be done by incentive rather than by a control of the type that has been enforced?

MR. BROCKELBANK: There are two classes of products here: one is an energy that is produced by private industry; the other is an energy that is available because of publicly-owned power sites. For example, there is the Columbia River, the Saskatchewan River and so on, and I think we have to recognize there would be a difference in dealing with these situations. You might consider the hydro, the publicly-owned hydro sites in the light of future needs, as to whether or not you would allow export. When you consider the products like wheat or oil, whether you are going to allow export, you

have an industry here which you have got to consider, too. It is somewhat different.

MR. COMMISSIONER HOWLAND: I noticed, Mr. Brockelbank, in the later part of your brief, that your gas and oil situations seem to be a little different and I wondered whether we could get the advantage of your thoughts on this, at the moment.

It looks as though Saskatchewan, with all its growth which you have forecast, is not going to have too much gas. In fact, you are going to be wanting to import it from Alberta. On the other hand, with oil, you want likely to move it either south or, as you are now doing, to a great extent, east.

Is it possible to have the same consistency in this? This might be an illustration of the problem of the energy problem at a national level. If Alberta is going to export a great deal of its gas and will not have any left for Saskatchewan, how would you feel, as a sister province?

MR. BROCKELBANK: I suppose we would feel the same as the Province of Manitoba would feel if we insisted on exporting all of our oil and refused to give any to Manitoba, provided, of course, that Alberta was not there to supply them.

MR. COMMISSIONER HOWLAND: But what about this incentive? You would agree that Alberta, would you, ought to get the highest possible price for its gas? For example, from the south, from a provincial point of view, they should have a high price. Now, Saskatchewan, on the other hand, might not be able to offer that high price.

Would you think there should be some in-

[illegible]

centive, on a national policy, or what is your thinking?

MR. BROCKELBANK: The highest possible price, I think we have to be fairly careful how we use that term, because there could be circumstances where you could be out of reason; but if there is fair competition, certainly I think Manitoba will be able to buy oil from us and we will be able to buy gas from Alberta at a reasonable price.

MR. COMMISSIONER HOWLAND: And what is this competition you are talking about?

MR. BROCKELBANK: The world market where they have got to sell, and maybe the oil market at Sarnia, maybe the gas market at Montreal.

MR. COMMISSIONER HOWLAND: But there is no international market of gas.

MR. BROCKELBANK: Well, the market. We will call it the market, not the world market.

MR. COMMISSIONER HOWLAND: I may be wrong. I have a suspicion, from the evidence before us so far, that the U.S. market might well offer a higher price for Alberta gas than will other parts of Canada. Now, just assuming this, I want to get the philosophy of your thinking, if this is so: is it in the national interest to sell this energy to the United States or would it be in the national interest to hold some of it for Canada and how are you going to do this, and the situation might be somewhat comparable to Eastern Canada with regard to oil or gas; you might want to hold it in Canada. Now, is this good policy or bad policy?

MR. BROCKELBANK: Well, I certainly think

that as Canadians we have got to take a good look at Canadian needs for energy and, on the question of price, I said earlier that the Province should not suffer; but, at the same time, you cannot make a decision on a question like this without getting it into the realm of reality and getting a look at all of the factors and circumstances, and I think anybody would be foolish to try to make an answer to a question like that.

MR. COMMISSIONER HOWLAND: Thank you, Mr. Brockelbank.

MR. COMMISSIONER LADNER: Mr. Minister, I have one question: you were referring to the need of equalizing the economic advantages and disadvantages of the various provinces and also, in that connection, you mentioned about the help, from a national point of view, of what I would call the central government.

Now, the help which you had in your mind, was that help by way of financial asssistance in raising the capital or assistance in raising the capital for these developments of national resources or was it help in the way of subsidy or was it help by way of concessions of tax burden? It would be useful to us to know what help you were referring to.

MR. BROCKELBANK: It could be pretty nearly any one of them. I do not think there is any question but that the Prairie Farm Rehabilitation Act has been of real value to Saskatchewan and the other Prairie provinces and that has been a national enterprise and there has been a good deal of money put into the development of agricultural resources under the provisions of that Act. The provision of capital

in some cases for the development of some resources could mean a very substantial help, and questions of subsidies might sometime come into the picture, too. The question of tax incentives, if it is a problem of developing resources -- and this is common practice, of course, in the nation, to supply tax incentives for certain activities; there are all kinds of examples in that line, I think.

So there are many ways in which assistance can be given to balance up, shall we say, the energy consumption situation throughout the country. I do not think anyone can ever assume that we can reach absolute equality. That might be very dull, anyway.

MR. COMMISSIONER LADNER: I have one other question, Mr. Minister, and that is related to the quotation of Mr. Davis on page 1 of the introduction the essence of which was that the countries in the world which utilize their energy were in a far better position than those which exported it, so to speak. My question relates to the general principle of the matter of policy: in your judgment, how far should you go on exporting raw materials, in this case energy, as against a policy which would tend towards confining the use of that energy in Canada for its natural and economic advancement.

MR. BROCKELBANK: How far you should go in confining the use of energy?

MR. COMMISSIONER LADNER: Should there be a wide-open policy as to the sale of the energy to a foreign country, for example, or would you have a restriction to ensure its ultimate utilization in the development of Canada?

MR. BROCKELBANK: Certainly, if you have a renewable source of energy and you have your own requirements supplied, then I think it becomes very simple if you can export it and get in return other goods; it is good business. And, again, it is a question of balancing one thing against another; a matter of degree.

THE CHAIRMAN: Of course, in the case of natural gas and oil, they are not renewable forms of energy.

MR. BROCKELBANK: No.

THE CHAIRMAN: And that poses a very difficult problem.

MR. COMMISSIONER BRITNELL: Mr. Chairman, there is one small question I would like to ask: on the top of page 2, the first full paragraph, there is a statement, Mr. Minister: "In matters of energy policy, then, Saskatchewan's primary interest is on the side of energy consumption." Would it be fair to assume if providence and technology were suddenly to reward Saskatchewan with as much energy as one or two other provinces are presently endowed with, there might be a fairly quick shift in emphasis to the point where the export policy became of first-class importance.

MR. BROCKELBANK: Oh, yes, I think that is true. I think the point that is being made here is that we recognize if our Saskatchewan people are going to have increased better standards of living, they must, of necessity, consume more energy. We did not build our big power plants on the coal fields of Estevan to export power; they were built to supply Saskatchewan people with power. But you could come to a point where your secondary policy in this primary interest, the secondary interest would become very important.

MR. COMMISSIONER BRITNELL: Thank you.

THE CHAIRMAN: Thank you, very much, Mr. Minister.

MR. PATTERSON: Mr. Chairman, may I suggest we have a brief recess before proceeding with the rest of the reading of the brief.

THE CHAIRMAN: Yes, Mr. Patterson. Mr. Minister, who is going to read the portion to page 36, for the benefit of the Reporter?

MR. BROCKELBANK: I would like to introduce

Mr. A. J. Williams, Director of the Petroleum and Natural Gas Branch who will take that part of the brief.

THE CHAIRMAN: It has been customary in our hearings to adjourn for ten minutes in the middle of the morning and I think it would be wise if we followed that procedure here.

---A short recess.

THE CHAIRMAN: Gentlemen, we shall now resume the hearing. Mr. Williams, will you take on.

MR. WILLIAMS: PART I - PETROLEUM DEVELOPMENT: A. GEOLOGY AND BACKGROUND OF DEVELOPMENT.

1. Geology: The Province of Saskatchewan has a surface area of about 161,088,000 acres. Pre-Cambrian rocks are exposed to the surface in the northern third of the Province, but sedimentary rocks underlie the southern two-thirds -- approximately 102,000,000 acres. Of this, more than 90,000,000 acres are underlain by sediments that are potentially petroleum bearing.

The sedimentary rocks of Saskatchewan lie in a wedge that increases from zero in the north to a vertical thickness of slightly over two miles in the south. Overlying these rocks is a thin veneer of unconsolidated glacial drift which obscures them from view except at the northern limit of the sedimentary area of the Province and in local areas of south-eastern and south-western Saskatchewan. All geological systems, except the Permain and Pennsylvanian, are represented in this volume of rock, although all systems do not have an equal area of distribution.

Long periods of erosion during the geological history of Saskatchewan reduced the areal distribution of some systems, whereas lack of deposition served to confine other systems to a small area. The most complete stratigraphic column is found in south-central and south-eastern Saskatchewan, which part of the Province lies within the Williston Basin area.

Intermittent periods of erosion served to confine rocks belonging to the Mississippian, Triassic and Jurassic systems to southern Saskatchewan. Cambrian rocks are confined to western Saskatchewan, in part a result of non-deposition and in part a result of removal by erosion following deposition. Rocks belonging to the Ordovician, Silurian, Devonian and Cretaceous systems appear to extend over the entire sedimentary area of Saskatchewan.

To date, commercial oil and gas discoveries have been confined to three systems, namely, Mississippian, Jurassic and Cretaceous, although oil shows have been encountered in Ordovician, Silurian and Devonian sediments. With the exception of the Coleville, Lloydminster and Wapella areas, all Jurassic and Cretaceous fields are confined to extreme south-western Saskatchewan and all Mississippian fields occur in extreme south-eastern Saskatchewan.

2. History of Mineral Rights: The first legal document which applied to what is now Saskatchewan was the Hudson's Bay Company charter from his late Majesty King Charles II in 1670. This document gave to the company Rupert's Land together with all mineral rights thereunder. Rupert's Land covered all the lands drained by the streams flowing into Hudson Bay and

thus included practically all of the southern two-thirds of Saskatchewan.

On November 19, 1869, the Hudson's Bay Company surrendered all its rights to Rupert's Land to Queen Victoria, receiving in return a grant of 300,000 pounds from the Canadian Government and retaining 1/20th of all the fertile belt which extends from the Lake of the Woods west to the Rocky Mountains, south of the North Saskatchewan River to the International Boundary. It also retained certain rectangular areas around trading posts. The grant amounted to 3,353,000 acres more or less of land, in what is now Saskatchewan, with all minerals included. This was made up by the selection of sections 8 and 26 in all townships divisible by 5 and sections 8 and the south half and northwest quarter of section 26 in all other townships. From subsequent dispositions the company has retained the mineral rights to approximately 2,353,000 acres.

As a result of growing demand for union in Canada, railway building began in 1871 and a land policy was developed with it. Tremendous expenditures were required to build railways over the vast expanses of prairie and mountains, and the Canadian government decided to assist with generous gifts of land and money. The first Canadian Pacific Railway Act of June 14, 1872, as later amended February 15, 1881, gave that railway company a cash subsidy of 25 million dollars and 25 million acres, both the sale and settlement of which would provide revenue for the railway.

Section 11 of the contract allowed for the quality of land to be a factor in the selection. The railway as a result chose the best of the arable land

in what is now the prairie provinces.

Similar land grants were made to other railway companies. The result of these grants was an alienation of 15,000,000 acres of mineral rights in Saskatchewan to railway companies, 2,890,000 acres of which are still held by the C.P.R. and 3,167,000 acres by the C.N.R. Many of the lands were disposed of by the railway companies to colonization companies as well as to settlers.

Minerals were included in homestead entries west of the Third Meridian until October 31, 1887, and east of the Third Meridian until January 11, 1890. After these dates, any land grants for homestead purposes had the minerals reserved to the Crown. These further alienations to homesteader and colonization companies accounted for approximately 2,142,000 acres. These alienations, therefore, amounted to 20,495,000 acres.

In 1905, when Saskatchewan became a province, the Dominion Government retained the rights to the natural resources to help provide revenue for immigration and settlement. On October 1, 1930, by agreement, these rights were transferred to the province, reserving to the Dominion Government certain lands as Indian Reserves, Soldier Settlement Land, Prince Albert National Park and certain other reserves. These latter reservations amounted to about 1,973,000 acres.

Altogether the total mineral acreage in Saskatchewan, not provincially owned, therefore, totals some 22,468,000 acres.

In Saskatchewan there are approximately 161,088,000 acres of land, 81,271,000 acres of which

are in the unsurveyed portions, mainly in the north, and 79,817,000 acres in the surveyed portion in the south.

In the unsurveyed portion, the minerals are practically 100% provincially owned, while in the surveyed portion 57,349,000 acres are so owned, making a total of 138,620,000 acres more or less in which the mineral rights are vested in the Crown in the right of Saskatchewan. (See Table 1 -- Mineral Ownership). Percentagewise, therefore, it might be stated that the Crown in the right of the Province owns approximately 80% of all mineral rights in Saskatchewan, while it owns approximately 70% of the mineral rights in the sedimentary area.

TABLE I: Mineral Ownership in Acres Today

Area unsurveyed in Saskatchewan	- 81,271,000	
Area surveyed in Saskatchewan	- 79,817,000	161,088,000
Hudson's Bay	- 2,353,000	
C.P.R.	- 2,890,000	
C.N.R.	- 3,167,000	
Others	- 12,085,000	
Government of Canada	- 1,973,000	22,468,000
Provincial Ownership		138,620,000
Provincial Ownership Unsurveyed		81,271,000
Provincial Ownership Surveyed		57,349,000

Disposition of Crown Lands

It was not until late in 1948 and early 1949 that disposition of Crown owned mineral lands under permit to explore commenced on a large scale. Since then there has been a steady increase in exploration and development in the province. Even though there has been some decrease in the amount of acreage under permit, there has been a great increase in the amount under lease. The concentration of leases will largely be found around the producing areas, since a company

cannot produce petroleum onexploratory permits.

Most of the original dispositions made in 1948 and 1949 terminated in 1955. This accounts for the substantial decrease, shown in Table II, in acreage under permit in that year.

It will also be noted in Table II that from 1955 to 1956 there was a rather sharp increase in the acreage under lease as a result of conversion from permit to lease.

At least 50% of the acreage shown as under Exploratory Permit in the table will be returned to the Crown; this land will then again be open for disposition by means most beneficial to the Crown.

TABLE II: Crown Land Disposition in Acres as of December 31, 1957

Year	Exploratory Permit	Lease	Total
1950	36,400,000	311,000	36,711,000
1951	33,600,000	610,000	34,210,000
1952	33,400,000	1,133,000	34,533,000
1953	27,200,000	1,821,000	29,021,000
1954	28,900,000	2,223,000	31,123,000
1955	15,700,000	3,674,000	19,374,000
1956	20,300,000	6,765,000	27,065,000
1957	25,200,000	6,641,000	31,841,000

3. Geophysical Operations: It was during the period 1940 to 1945 that the first major attempts at employing geophysical methods in the search for petroleum and natural gas were made in Saskatchewan. Imperial Oil had procured large exploration reservations in the southern portion of the province, bounded in a general way by Swift Current in the south-west, Elbow-Davidson to the north, and Weyburn to the south-east. Several seismic crews were under contract during this time and large areas were covered by means of a reconnaissance spot correlation program. Some local detailing was done where apparent anomalies were

revealed. The gravity meter was also tried to a limited degree in the vicinity of Weyburn; however, since it was rather difficult to correlate these early results with the seismic and near surface geological data, this method was discontinued. Some fourteen wild-cat wells were drilled on what appeared to be the most promising structures, with rather disappointing results, and subsequently the reservations were dropped.

With the termination of Imperial Oil's reservations in the midnineteen forties, exploration for oil and natural gas, particularly the geophysical phase, was temporarily in the doldrums. However, after the discovery of the Leduc field in 1947, there was renewed interest in Saskatchewan. By 1950 the large scramble for permit acreage was over and practically all the Crown lands south of a line running through Lloydminster, Prince Albert and Yorkton were under disposition by permit, both to major and smaller independent oil companies. Since the permits called for certain work commitments (to remain in good standing), and also because most of the tracts lay in relatively virgin, hitherto unexplored territory, geophysical exploration in Saskatchewan came into its own.

The magnetic and gravimetric methods were used extensively during the early phase of exploration in order to outline general areas of interest, since those surveys could cover large tracts involving less equipment, personnel, and expense as compared with the seismic method. The latter was then employed in checking and detailing anomalous conditions suggested by the previous surveys. Due to the difficulties involved in the interpretation of magnetic and gravimetric data,

some of the operators emphasized the immediate use of the seismograph, which, although more costly, would undoubtedly give them a more accurate picture of the structure of the sediments underlying their concessions.

The geophysical operations were rather non-selective at first, and hence conducted in varying degrees of type and detail, in practically all of the areas under permit. However, after the completion of numerous wildcat wells, with the resultant oil and natural gas discoveries in certain formations in particular regions, geophysical activity in turn became selective. (e.g. There were Viking and Banff oil and natural gas finds in west-central Saskatchewan, Jurassic oil discoveries in south-west Saskatchewan, and finally Mississippian oil discoveries in south-east Saskatchewan, following encouraging results at Frobisher in 1954).

Where wildcat drilling had met with little success, many of the original permits issued in 1949 and 1950 were dropped in 1953-54. Consequently, geophysical activity came to a halt in those original areas and was concentrated in permits which appeared to be more promising in the light of the discoveries made to that time. In 1955-56, all of the original (1949-1950) permits were terminated and the owners were required to make their lease selections. This resulted in a further confinement of geophysical operations to areas under lease, and to those areas in which new permits had been granted.

Interest in obtaining new exploration permits in Saskatchewan was now at a low ebb and remained so until the 'Granite Wash' discoveries in Alberta were

announced. This event created a large demand for acreage in northern Saskatchewan, extending from near the Pre-Cambrian shield outcrop to points as far south as Saskatoon and Humboldt. Some of this territory had been under disposition previously but was now to undergo further scrutiny with particular emphasis on the basal sands immediately overlying the pre-Cambrian rocks. A rejuvenation of geophysical surveys in those parts commenced shortly afterwards and these are still being carried on to a limited degree at the present time. Unless some encouraging strikes are made soon, however, it is feared that those tracts will once again become dormant.

The most important news affecting the Saskatchewan oil industry (since the numerous Mississippian finds in the south-east) was the discovery, in December, 1956, of Lower Paleozoic oil in northern Montana, just a few miles south of the Saskatchewan border. This again resulted in immediate demands for exploration permits in south-central Saskatchewan and, in fact, a second look at practically the entire Lower Paleozoic basin. Recent permit sales have reflected this interest and there is every reason to believe that considerably more geophysical exploration, particularly seismic, will be carried on here.

Table III is a summary of the number and types of geophysical crews licensed each year in the province during the period April, 1950 to January, 1958. It must be noted in connection with these figures that the total number of crews in operation during the course of a year vary considerably, and the totals listed here do not necessarily represent the number of

active crews during peak periods. This activity has always experienced seasonal fluctuations, in addition to the normal changes in pace encountered in the over-all exploration cycle.

TABLE III: Summary of Geophysical Crews Licensed in Saskatchewan

Date	Seismic	Gravity	Magnetic (Ground & Airborne)	Other Geophysical	Total
April 1950-March 1951	40	8	4	2	54
April 1951-March 1952	39	8	6	2	55
April 1952-March 1953	42	2	10	4	58
April 1953-March 1954	40	1	8	1	50
April 1954-March 1955	47	-	6	2	55
April 1955-March 1956	50	-	5	3	58
April 1956-March 1957	39	3	3	13	58
April 1957-Jan. 1958	37	2	6	6	51

Analysis of Cost Data on Geophysical Work Performed to Date

Table IV summarizes in a general way the expenditures incurred in geophysical exploration from 1953 through 1957.

TABLE IV: Summary of Cost Data on Geophysical Work Performed in Saskatchewan

Items	1953	1954 (Dollars)	1955
Structure Test Hole Surveys	557,367	2,038,719	697,724
Seismic Surveys	6,127,406	5,008,739	5,011,292
Other Geophysical Surveys	733,919	587,823	809,123
TOTAL	$7,418,692	$7,635,281	$6,518,139

Items	1956 (Dollars)	1957
Structure Test Hole Surveys	500,000	N.A.
Seismic Surveys	4,900,000	7,408,000
Other Geophysical Surveys	900,000	335,000
TOTAL	$6,300,000	$7,743,000

Average Seismic Survey Costs -	$20,000/ crew month or approximately $1,000/crew day, during which period ten holes are usually drilled. Hence, approximately $100/shot hole.
Average Gravity Survey Costs -	$7,500/crew month or approximately $375/crew day, covering 8 miles. This results in approximately $47/linear miles surveyed.
Average Aeromagnetic Survey Costs -	$6 to $7 per flight mile for magnetic survey only.However, may run as high as $15 to $16 per flight mile if other surveys (e.g. Electromagnetic) are run as well. These costs include basic interpretations.

4. Summary of Oil and Gas Development: Up to the end of 1957 a total of 6,058 wells had been drilled in Saskatchewan. Of this number, 3,414 were initially completed as oil wells, 192 as gas wells and 2,402 were abandoned as dry holes. Total footage drilled was 21,109,585, or an average of 3,485 feet per well.

Detailed records of early drilling ventures were not kept, but it is known that a total of 14 wells were drilled in Saskatchewan as far back as the period 1900-1919. The earliest success achieved was the discovery of natural gas in commercial quantities in what is now known as the Lloydminster field, in March of 1935. It was not until November of 1944 that the first oil well was completed in Saskatchewan. It, too, was located at Lloydminster.

Following these early successes, interest picked up somewhat and a small scale drilling program developed, concentrated in the Lloydminster area. As yet, however, there was no indication of the tremendous oil resources, since revealed. By 1950, Saskatchewan had a total of 191 oil wells and 55 gas wells capable of production. All of the oil wells and most gas wells were located in the Lloydminster area. Gas was also being produced in small quantities from fields at Unity and Kamsack. The industry to that date, can be considered as purely local in character. The oil produced was of heavy gravity, suited mainly to the production of heavy fuel oils and specialty asphalt products. As a result, the oil had a rather limited commercial value. Since production was being obtained at depths ranging from 1800-2000 feet, a relatively moderate drilling cost per well was encountered. This permitted exploration and development work to be carried out by a large number of syndicates and private individuals.

Medium gravity crude was first discovered in Saskatchewan near Fosterton in December of 1951. The oil had a gravity range of 20°- 23° A.P.I. and had the marketing disadvantage of a fairly high sulphur content. Following this discovery several major oil companies embarked on an extensive and intensive rilling program covering large areas of the south-west part of Saskatchewan.

As new wells were a ded to an already impressive total, the problem of additional markets for new production became the chief obstacle. As a result of co-operative action betewcen several producing

companies, a pipeline was constructed from Fosterton to link up with the Interprovincial Pipe Line at Regina. A new refinery was also constructed in the Minneapolis-St. Paul area, specially designed to process medium gravity sour crude. An interconnecting pipeline between Minneapolis and the Clearbrook, Minnesota terminal of the Lakehead Pipe Line was also constructed. As a result of this program, the fields in the Swift Current area have enjoyed an adequate market for their full productive capacity, at present nearly 30,000 barrels per day.

Another discovery of heavy gravity crude was made near Coleville, in September of 1951. Development drilling indicated the presence of substantial reserves and as a result a refinery was constructed at Coleville to process this heavy crude. It was placed on stream in April, 1953. In the same month and year, the first discovery of light crude in the Coleville area was made. A short pipeline to move this light crude production into the Interprovincial Pipe Line was subsequently built.

The spark which ignited the current oil boom in Saskatchewan occurred in February of 1953 when light oil was discovered near Forget, in the south-east. Subsequent drilling revealed the presence of medium gravity crude at Midale in May of 1953. Production in this area is obtained from the 4000-5000 foot level, from Mississippian strata which lie in the Williston Basin, extending over the border into the northern states.

TABLE V: Summary of Saskatchewan Oil and Gas Wildcat Discoveries 1935-1957

Year	Light Gravity	Medium Gravity	Heavy Gravity	Total Oil	Total Gas
1935-43	-	-	-	-	2
1944	-	-	1	1	3
1945	-	-	1	1	-
1946	-	-	1	1	1
1947	-	-	2	2	-
1948	-	-	4	4	-
1949	-	-	4	4	-
1950	-	-	2	2	1
1951	-	-	3	3	4
1952	1	10	13	24	8
1953	6	16	2	24	4
1954	11	6	2	19	9
1955	8	7	5	20	5
1956	25	5	3	33	6
1957	21	11	4	36	6
Total	72	55	47	174	49

5. Expenditure on Exploration and Development:

The cash expenditure on drilling activity in Saskatchewan to date has been impressive. The following table summarizes this cost for the last five year period, based on estimates by operating companies.

TABLE VI: Expenditure on Petroleum Development 1953-1957

	1953 (Dollars)	1954
Development Wells	16,100,000	14,900,000
Wildcat Wells	12,510,198	13,100,000
Totals	28,610,198	28,000,000

	1955 (Dollars)	1956 (Dollars)	1957
Development Wells	27,475,000	42,600,000	56,917,000
Wildcat Wells	12,275,000	17,700,000	13,369,000
Totals	39,750,000	60,300,000	70,286,000

Most drilling done to date in Saskatchewan has been fairly shallow. Of more than 6,000 wells drilled up to the end of 1957, only slightly more than 200 had penetrated to the Devonian system. However, the discovery of Ordovician and Silurian oil in Montana and North Dakota has stimulated interest in these deeper zones in Saskatchewan. Good shows have been obtained in this province and it is expected that a substantial number of deep tests will be drilled in 1958 to evaluate these formations. The trend to deeper horizons becomes quite apparent from an examination of the following table, which indicates average depth of wells drilled.

TABLE VII: Average Depth of Wells Drilled 1950-1957

Year	Average Well Depth (feet)	Year	Average Well Depth (feet)
1950	2,220	1954	3,210
1951	2,910	1955	3,530
1952	2,900	1956	4,140
1953	3,430	1957	4,260

For further statistical information on drilling, see Appendix I, A-C, Petroleum and Natural Gas Statistical Yearbooks, 1900-1954, 1955 and 1956. 1957 statistics are contained in Appendix I, Table I and II.

In order to present a concrete picture of representative oil and gas finding costs in the various Saskatchewan fields, attention is directed to the following table. The cost figures listed are individual well allowances in connection with Net Royalty leases. These figures are based on an average drilling cost of $3.75 per foot and include all expenses incurred in casing, perforating and completing a well,

together with construction of battery facilities, storage tanks and flow lines. These figures are considered to be conservative.

TABLE VIII: Average Well Cost (By Field)

Field	Average Depth (Feet)	Net Royalty Lease Allowance
Alameda	4,500	$74,500
Alida	3,700	68,000
Bone Creek	4,400	63,000 *
Carnduff	4,400	72,000
Coleville-Smiley	2,500	36,500 *
Dollard	4,600	65,000 *
Fosterton	3,100	57,500 *
Gainsborough	3,550	67,000
Glen Ewen	4,300	72,500
Hastings	4,000	69,500
Instow	4,500	63,000 *
Lloydminster	1,900	25,000 *
Midale	4,600	76,500
North Premier	3,400	59,500 *
Nottingham	3,700	67,000
Queensdale	4,000	71,000
Steelman	4,700	76,000
Success	3,200	57,500 *
Wapella	2,300	52,500
Weyburn	4,500	77,500

* These figures were developed one to three years ago, so may not be representative of present costs. All other figures were brought up to date at the beginning of 1958.

6. Production: Following is a table showing the annual production, accumulative total, and average daily production of petroleum in Saskatchewan from 1940-1957.

(See next page for Table IX)

TABLE IX: Saskatchewan Crude Oil Production, Annual Comparison, 1940-1957

(Quantities in Barrels)

Year	Crown	Private	Total	Accum. Total	Av. Daily Production
1940	331	-	331	331	0.9
1945	16,508	-	16,508	16,839	45.2
1946	119,252	17,635	136,887	153,726	375.0
1947	351,542	169,558	521,100	674,826	1,427.7
1948	396,528	446,374	842,902	1,517,728	2,303.0
1949	333,370	446,800	780,170	2,297,898	2,137.5
1950	598,169	441,354	1,039,523	3,337,421	2,848.0
1951	785,512	461,883	1,247,395	4,584,816	3,417.5
1952	1,087,206	609,740	1,696,946	6,281,762	4,649.2
1953	1,835,281	956,191	2,791,472	9,073,234	7,647.9
1954	3,383,552	2,039,347	5,422,899	14,496,133	14,857.3
1955	7,159,236	4,157,932	11,317,168	25,813,301	31,005.9
1956	13,612,236	7,465,135	21,077,371	46,890,672	57,583.1
1957	21,638,665	15,222,424	36,861,089	83,751,761	100,989.1

B. ADMINISTRATION AND POLICY.

1. The Department of Mineral Resources - Organization and Functions

The organization and functions of the Department of Mineral Resources is shown in Appendix II, figure I. The basic organization of the Department is designed to administer two broad classes of minerals; (1) petroleum and natural gas and (2) metallic and industrial minerals. Administration of petroleum and natural gas, which is all that is covered here, rests primarily with the Petroleum and Natural Gas Branch. The Oil and Gas Conservation Board acts as an advisory body to the Minister on problems related to the conservation of oil and natural gas. Auxilliary services respecting administration of petroleum and natural gas are delegated to the Audits Branch, Records Branch, Legal Office, Administration Branch and Mineral Taxation Division.

(a) Petroleum and Natural Gas Branch

The Petroleum and Natural Gas Branch is divided into six divisions each with some direct administrative duties:

(i) Petroleum Lands Division - this division is responsible for the disposition of land in which the Crown owns the petroleum and natural gas rights, the recording of data and documents respecting such disposition, and the registering of plans, permits and data under authority of the Pipe Lines Act and the Oil and Gas Conservation Act;

(ii) Geophysical and Evaluation Division - this division administers the Geophysical Exploration

Regulations, evaluates Crown petroleum and natural gas rights, records, analyzes and maps geophysical data;

(iii) Petroleum Development Division - this division is responsible for drilling and production practices in oil and gas fields in Saskatchewan and administers portions of the Regulations under the Oil and Gas Conservation Act;

(iv) Petroleum Reservoir Division - this division administers the limitation of production provisions respecting wells, under the Oil and Gas Conservation Act and conducts studies and evaluates oil and gas reservoirs;

(v) Petroleum Statistics Division - this division records all data on production and disposition of petroleum and natural gas from Crown and freehold lands in the province and publishes weekly, monthly and annual reports on data compiled;

(vi) The Petroleum Geology Division - this division is responsible for examination, analysis and storage of cores and samples taken during drilling operations and conducts research work respecting the geology of the surface and subsurface formations in the province.

The Petroleum and Natural Gas Branch conduct public inquiries into certain phases of oil and gas development and production such as well spacing, water flood programs, gas conservation programs or any other matter related to the development of oil and gas production in Saskatchewan.

(b) Oil and Gas Conservation Board

The Saskatchewan Oil and Gas Conservation

Board was established on September 8, 1952 under provisions of The Oil and Gas Conservation Act as an advisory and review body which makes reports and recommendations to the Minister of Mineral Resources for appropriate action. One of the purposes was to provide a forum at which conservation problems could be examined at hearings open to the public, at which all interested persons could be heard.

The Oil and Gas Conservation Board is composed of Mr. J. T. Cawley, Deputy Minister of Mineral Resources, who acts as Chairman, and Dr. J. W. T. Spinks, Dean of Graduate Studies of the University of Saskatchewan, and F. H. Edmunds, Professor of Geology, University of Saskatchewan as Board members. The Department Solicitor, J. E. Gebhard, acts as Secretary to the Board. The Government retains Mr. H. H. Kaveler, Petroleum Engineering and Management Consultant of Tulsa, Oklahoma as consultant to the Board. The position of Technical Co-ordinator to the Board has been created to co-ordinate work performed by the Board and the Department and the position is held by Mr. R. M. Coons, a Petroleum Engineer and Geologist. The work of the Board is financed by the Government of the Province of Saskatchewan.

The Board, any member of the Board, or any person authorized by the Board, may make inspections, studies and investigations, collect data and other forms of information pursuant to the provisions of The Oil and Gas Conservation Act and may make a report to the Minister on any matter referred to it by him. Provision is also made in The Oil and Gas Conservation Act and The Pipe Lines Act for the Board to hold public

hearings on the motion of the Minister of Mineral Resources or on application of any interested party. In either case, the Minister instructs the Board to hold a public hearing and specifies the matter to be heard. The Board may be ordered to hold hearings on: (i) the pooling of separately owned tracts in a drainage unit where the interested parties have been unable to reach a satisfactory agreement; (ii) the operation of a field or pool as a unit; (iii) any other matter relating to oil and gas conservation or pipe lines. Further provision is made for the Board to hold a public hearing on the application of any person affected by an order of the Minister made without a Board meeting.

The hearings of the Board are open to the public and submissions and representations from any interested person on the matter being heard may be received and considered by the Board. All witnesses are sworn and the proceedings are transcribed and are available to any interested person. On completion of the hearing, the Board makes its recommendation to the Minister for appropriate action.

General authority is also given for the Minister to order a rehearing on any matter upon which the Board has made a recommendation, if the Minister deems it to be advisable. Appendix II, Table I summarizes hearings of the board, the subject matter dealt with and recommendations made.

(c) Auxilliary Services

(i) Audits Branch - this Branch is responsible for all audits conducted under provisions of the Acts and Regulations, including Crown royalty statements, not royalty lease payments, and pipe

line company audits.

(ii) Records Branch - this branch maintains records on Crown owned mineral rights and dispositions and acts as a central information source to the general public on dispositions of mineral rights in Saskatchewan, records mechanics liens against mineral rights acquired from the Crown, and operates the Department's drafting and library services.

(iii) Legal Office - the Solicitor is responsible for preparation of all Orders in Council and Minister's Orders under provisions of the Acts administered by the Department, for changes and revisions in legislation, and for drafting and approving leases, agreements and contracts respecting Crown mineral dispositions. This office is also responsible for drafting and preparing Plans of Unitization and Pooling plans.

(iv) Administrative Branch - is responsible for Accounting, procurement and property control, personnel and budgeting and general administration of the Department.

(v) Mineral Taxation Division - this is the only division of the Metallic and Industrial Minerals Branch directly associated with oil and gas and administers the Mineral Taxation Act.

2. <u>Legislation</u>

The laws pertaining to oil and gas are promulgated at three different levels of government. Statutes are enacted by the Legislature; regulations are made by the Executive Council and rules or orders

by the Minister of Mineral Resources.

The exploration, development, production, transportation and taxation of petroleum and natural gas in the Province of Saskatchewan are regulated and controlled by:

(a) The Mineral Resources Act

(i) Petroleum and Natural Gas Regulations

(ii) Geophysical Exploration Regulations

(b) The Oil and Gas Conservation Act

(i) The Oil and Gas Conservation Regulations

(c) The Pipe Lines Act

(i) The Pipe Lines Regulations

(d) The Public Utilities Companies Act, and

(e) The Mineral Taxation Act

Copies of these Acts and regulations are attached hereto as Appendices III, A-G.

(a) <u>Mineral Resources Act and Regulations</u>

The Mineral Resources Act provides that Crown minerals shall be leased or otherwise disposed of only in accordance with the provisions of the Act and the regulations thereunder. The Petroleum and Natural Gas Regulations generally govern the disposition of Crown owned petroleum and natural gas rights. The Geophysical Exploration Regulations regulate and control the use of equipment and supplies used in applying physical science to determine geologic and other conditions which may lead to the discovery of mineral accumulations.

(i) The Petroleum and Natural Gas Regulations provide for three types of disposition of Crown owned oil and natural gas:

I Exploratory Permits

II Drilling Reservations

III Leases

The Petroleum and Natural Gas Regulations set forth provisions with respect to royalties payable on oil or natural gas produced from Crown leases, and certain general provisions respecting disposition of Crown owned petroleum and natural gas. Provisions of the regulations governing the payment for surface rights required in the exploration and development of petroleum and natural gas apply to Crown as well as to certain freehold land. Certain special royalty provisions apply where the oil and gas rights in a pool have been unitized due to allocations of production to tracts, whereas standard royalty provisions are on a sliding scale based on individual well production.

(ii) The Geophysical Exploration Regulations under the Mineral Resources Act (Appendix III-C) govern the conduct of geophysical operations in Saskatchewan.

(b) The Oil and Gas Conservation Act

The Oil and Gas Conservation Act and Regulations thereunder are designed to control effectively all phases of oil and gas exploration, development, production and conservation, whether ownership of the petroleum and natural gas is derived from the Crown or freehold. The expressed purposes of the Act are to:

(i) prevent waste;

(ii) regulate all operations for the production of oil and gas in such a manner that the

greatest possible ultimate recovery thereof by prudent and proper operations and practices may be realized;

(iii) protect the correlative rights of each owner; and

(iv) enable each owner to obtain his just and equitable share of the allowable production of any pool.

(c) Pipe Lines Act and Regulations

The Pipe Lines Act and Regulations thereunder regulate and control the construction and operation of pipe lines for the transportation of oil and natural gas within the jurisdiction of the province.

(d) Public Utilities Companies Act

The Public Utilities Companies Act provides that the Local Government Board may declare a purchaser of petroleum or natural gas to be a common purchaser and a pipe line company to be a common carrier. Provisions of the Act allow the Local Government Board to fix tariffs for pipe lines declared to be common carriers and to fix the price paid for natural gas at the well head.

(e) Mineral Taxation Act

This Act is applicable to freehold minerals and provides fob the taxation of minerals not owned by the Crown. It may be divided into three parts, namely, the general levy, assessment on mineral deposits, and enforcement. The Act became effective January 1, 1945.

(i) The General Levy - Every owner of minerals, regardless of the kind of mineral owned, is subject to the tax at the rate of 3¢ per acre per

annum, the minimum annual tax per title being $1.00. Certain exemptions are allowed: the owner of coal only is not subject to the levy (since 1956), nor the owner of minerals on railway rights of way and station grounds, nor the owner of minerals within the limits of any city, town or village, nor the owner of minerals under land subdivided into residential or business lots or cemeteries.

(ii) Assessment on Mineral Deposits - In addition to the levy, the owner of the rights to coal, petroleum or natural gas is assessed where there is production, the amount of production during the previous year being the basis of a formula used to calculate the value for assessment purposes, the rate being not more than 10 mills. Certain details are published as Orders in Council. There are no exemptions to the assessment.

In addition to the levy, the owner of mineral rights other than coal, petroleum or natural gas, may be assessed on the value of minerals in place, in which case an Order in Council is published establishing a certain defined area and naming the mineral and taxation rate; provision is made for an interim levy of 50¢ per acre per annum to be paid pending completion of the tax roll. This part of the Act is not operative at the present time.

(iii) Enforcement - Enforcement consists, in practice, of forfeiture of the mineral title for non-payment of arrears. Five months grace period is allowed for payment of the arrears and after

this period has elapsed without such payment, a final notice may be sent, setting a date at least six months ahead by which the tax arrears must be paid otherwise the title will be forfeit. At this time the title is endorsed and every person who appears to have an interest in the minerals is sent a copy of the notice. The Act also contains provision to collect taxes by distress where the minerals are held separately from the title to the surface.

5. Geological and Geophysical Work, Records and Information

(a) Surface Geological Work

Because of the cover of glacial drift over the sedimentary area of Saskatchewan the amount of surface geology done has been small. Some Ordovician and Silurian exposures occur along the northern edge of the sedimentary basin area extending about 100 miles westward from the Manitoba border, immediately to the south of the town of Flin Flon. As these rocks are of a type that may make petroleum reservoirs, they have been thoroughly studied by geologists from oil companies and from the Provincial Government. Other outcrops in the Province are of Tertiary age and occur in local areas of south-eastern and south-western Saskatchewan. Although these rocks are not potentially petroleum bearing, they have been studied by geologists in the hope that their surface features would give clues to possible structures at depth.

(b) Subsurface Geological Work

Subsurface geological work performed in the Province consists mainly of test wells drilled for oil and gas, of which more than 6,000 have been drilled to date. Thus far in Saskatchewan, 225 wells have

penetrated through the Devonian system and of these 80 were drilled to the pre-Cambrian basement. Samples have been taken at ten foot intervals on all wildcat wells and electric logs or other suitable mechanical logs obtained. In addition, a considerable amount of coring has been done on many wells.

Drilling has been done primarily by companies interested in oil and gas, with the exception of six wells drilled in the Big River area by the Saskatchewan Government in the early stages of development. In addition, a considerable number of wells have been drilled by companies interested in potash.

Initially, a considerable number of shallow structure test wells were drilled in southern Saskatchewan in the hope that the wells would detect the presence of structure at depth. Structure test hole drilling is still continuing in many areas of southern Saskatchewan but these wells are generally drilled for the purpose of verifying seismic data.

(c) Geological Records Maintained by the Department

The Department of Mineral Resources maintains a complete set of records of all subsurface exploration carried out in the Province. All of the information on each well is recorded on forms prepared by the Department, with the exception of mechanical logs, core analysis and core and sample descriptions, which are filed as submitted. These records are made available to the public provided the information requested has been released from confidential status in accordance with acts passed by the Provincial Legislature.

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The Department maintains a Subsurface Geological Laboratory in Regina, at which are stored all samples and cores taken in wells drilled in Saskatchewan. Prior to storage, samples are washed to remove excess drilling mud. Facilities are provided at the laboratory for the examination of cores and samples and these are made available to the public once they have been released from confidential status.

(d) Principal Geophysical Methods Utilized - Interpretation and Application

The gravity and magnetic work performed in the province has generally been implemented for reconnaissance purposes. So far local structural interpretations based on these surveys have been extremely difficult. Although certain relationships between the magnetic, gravity, and seismic data are noted in some areas of northern Saskatchewan, where the sedimentary section is relatively thin, very little correlation has been established in the southern regions where the sedimentary column attains a thickness of over 10,000 feet.

In order to qualify these remarks it must be remembered that most magnetic and gravity anomalies mapped are believed to originate in the pre-Cambrian basement complex, due to marked changes in the lithologic characteristics of these rocks and/or their structural configuration. Since most of our reliable seismic control, and for that matter well control, is confined to post Middle Devonian salt formations, and furthermore, since it is generally agreed that most of the local structures revealed by this information were caused primarily by some form of salt

tectonics and/or post Paleozoic erosion, the geophysicist in Saskatchewan therefore desperately lacks adequate local structural control for the pre-salt formations. With the recent advances in seismic data processing machines are examples, and with the overall improvement in operational techniques, additional velocity control, etc., it is expected that the structural attitude of the deeper horizons will become better known. This additional knowledge may then help to explain some of the magnetic and gravity anomalies that have been mapped to date, but not generally understood.

Some of the operators in Saskatchewan have tried geochemical, electrical and radioactive surveys to a limited degree. Although the theoretical implications in regard to these methods appear to warrant some attention, their practical value has been extremely questionable.

It is apparent, then, that the reflection seismograph has been and will continue to be the principal geophysical tool employed in the exploration for petroleum and natural gas in this province. Because of the generally flat terrain encountered in Saskatchewan, and also since most of the prospective oil territory lies within the surveyed area, with the advantage of a rather complete network of bench marks and municipal roads, seismic operational problems are reduced to a minimum.

(e) Disposition of Geophysical Information to Industry

The Petroleum and Natural Gas Regulations under the Mineral Resources Act call for certain basic

data to be submitted to the Department by geophysical operators with respect to work performed on Crown permits and drilling reservations. This material includes various types of maps and operational reports which are indexed and filed for departmental use, and which are made available to the public on the following basis:

(i) Whenever the holder of a permit or drilling reservation, either during the term or within 60 days thereafter, leases less than 30% of the available Crown lands in any township, and relinquishes his interest in the remaining Crown lands in said township, the Minister may as from the effective date of such lease, release all information submitted with respect to such township.

(ii) Where the holder of a permit or drilling reservation during the same period, leases an amount equal to or greater than 30% of the Crown lands within any particular township, such information will not be released with respect to such township within three years from the effective date of the lease, provided that if at any time any Crown lands subject to lease are reduced, or surrendered to an amount less than 30% in any township, the Minister may as from the date of such reduction or surrender release all such information in respect of such township.

In addition to the above, the Department has also prepared and published regional gravity, magnetic, and seismic maps compiled on the basis of the information submitted by the operators. These

maps are revised from time to time as additional data becomes available and the revisions are then published as warranted.

On occasions it has been found feasible to write short papers on the geophysical and geological aspects of a particular area and some of these reports appear in appropriate oil journals.

Three geophysical maps (Seismic, Gravity and Magnetic) are attached in Appendix IV, A-C, showing areas in the province for which information is on file with the Department.

4. Disposition of Crown Petroleum Mineral Rights

The Department of Mineral Resources has divided the lands in Saskatchewan underlain by sedimentary deposits by an arbitrary line into two portions of approximately equal areal extent. The line runs in a north-westerly direction through Yorkton, south of Saskatoon and north of Lloydminster. The Departmental policy with respect to exploratory permits differs in the two portions of the sedimentary basin. Exploratory permits to a maximum of 100,000 acres per permit are available on application in the northern portion of the sedimentary basin on a first come, first served basis. In the southern portion lands may be posted for sale on application for permit, drilling reservation or lease. A map showing Crown lands available for disposition is attached as Appendix IV-D. In general, the three types of mineral dispositions applicable to Crown owned oil and natural gas may convey certain rights with respect to oil and natural gas separately or oil and natural gas together.

Disposition of Crown owned petroleum and

natural gas rights may also be restricted to certain depths or formations. Thus, disposition of Crown owned petroleum or natural gas may be effected within the vertical planes of the tract under disposition and further limited by horizontal or near horizontal planes controlled by depth or geologic formations.

The Petroleum and Natural Gas Regulations under the Mineral Resources Act provide for disposition of mineral rights vested in the Crown in right of the Province by three principal methods: (a) exploratory permit, (b) drilling reservation, and (c) lease.

(a) Exploratory Permits

Blocks of lands of up to 100,000 acres each are disposed of by permit for exploration by drilling and geophysical methods. The maximum term of a permit is three years except in northern areas where extensions may be granted. A cash rental payment is required of 2¢ per acre for the first year, 5¢ per acre for the second and 10¢ per acre for the third and any subsequent years. The regulations set out a minimum work requirement of 20¢ per acre in the first year, (minimum $10,000), 40¢ per acre in the second and 60¢ per acre in the third year. During the second and third years at least one-half of the minimum required expenditure, or $15,000, whichever is the greater, shall be spent in actual drilling. Expenditures for any extension term would be as for the third year. Work done in any year in excess of the minimum requirement may be carried over to meet the requirement of the next succeeding year or years,

subject to certain restrictions, or may be used as a rental credit for leases taken out of the permit. Where the work commitment is not completely met, the balance is payable to the Department in cash or the permit is terminated without leasing privileges.

A permittee may not produce oil or gas from a well located on permit lands except for test purposes. If a well is proven capable of producing in commercial quantities, the permittee is required to select a lease block of a minimum of 1,280 acres containing the discovery well, and no other well on Crown mineral lands within 3 miles of the producer may be spudded until the lease application has been made.

Work must be commenced on a permit within 90 days after issue, unless additional time has been granted for special reasons. The regulations provide for grouping of two or more permits for the purpose of consolidating expenditures.

A permittee may surrender all or a part of a permit at any time during its term of existence.

Leases From Permits - The permittee, on compliance with the permit requirements, may select leases of the permit lands. The largest block which may be selected is 3 1/2 by 3 1/2 miles. If the permittee selects a block of this size his leases are limited to 50% of the permit lands in the township in which the block is located. If smaller blocks are selected, the percentage of lands which the operator may lease in the township increases to a maximum of 60% of Crown holdings. Blocks must be at least one mile apart, except that they may corner, and no block, unless under special circumstances, may

be located nearer than 1/2 mile to the edge of the permit. Leases issued are the standard petroleum and natural gas leases with a term of 21 years, renewable for further periods of 21 years. Credits from excess expenditures on permits may offset the first year's lease rental.

There is no limit to the number of permits which may be held by a permittee. As has already been noted, in the northern areas of the province permits are issued on request, but in the southern part of the province they must be advertised for bonus bids.

(b) Drilling Reservations

Drilling reservations were devised as a means of creating drilling activity in areas where a large percentage of the Crown lands has been disposed of by lease from permit, in areas near producing fields. In such areas, the remaining Crown rights are not sufficiently large to provide interesting permit acreage, nor are the rights sufficiently proven to warrant lease sales. Drilling reservations have a maximum size of 20,000 acres, and are good for a term of one year, with a possibility of two renewals.

All drilling reservations are advertised for bonus bids. In the advertisement the department indicates the formation required to be tested by drilling in order to qualify the holder for leasing privileges, and indicates the manner of lease selection. On meeting the work requirement, a reservation holder may ask for a renewal or may select leases of up to 50% of the lands.

If production is obtained from a well drilled on a reservation, the reservation terminates

and leases may then be selected.

Leases from a drilling reservation are standard petroleum and natural gas leases similar to those from exploratory permits. No credit against lease rentals is granted for expenditures on drilling reservations.

The fee for a drilling reservation is $250 and rental is 50¢ per acre per year.

(c) Leases

Leases will be discussed under the following heading:

(i) Standard Petroleum and Natural Gas leases from Exploratory Permits, Drilling Reservations or purchased at a lease sale; and (ii) Net Royalty leases.

(i) Standard Petroleum and Natural Gas Leases - These are 21 year leases renewable for further terms of 21 years. The rental required is 5¢ per acre per month from commencement to the following April 1st and then $1.00 per acre per year. These leases do not contain any direct provision for commencing work but are subject to the general provision that the Minister may send a notice to the lessee requiring him to commence work on the lease within six months after receipt of the notice.

If a lease is offset by a well producing from freehold lands, a notice is sent requiring the lessee to:

I. commence drilling a well within 60 days; or

II. surrender the drainage unit offsetting the producing well, or

III. elect to pay compensatory royalty, as though the freehold well had been located on the Crown lands.

Refund of Rent - the regulations contain provisions allowing certain refund of rentals during the first 3 years of the lease through drilling. Lands which are located within a 3 1/2 by 3 1/2 mile block around a producing well do not qualify for such refunds. These refunds are normally granted only during the first three years of the lease.

Gas Areas - the regulations provide for reduction in rent in areas delimited by drilling as gas areas, to 50¢ per acre per year where a market for the gas is available (or 35¢ per acre if oil rights are surrendered). If no market is available for the gas, the rent may be reduced to 25¢ per acre per year, or to 10¢, if oil rights are surrendered.

Royalty - production from standard petroleum and natural gas leases is subject to a sliding scale royalty of from 5% to 16% on oil, depending on the well's monthly production, and to 8% on gas and other products.

Application for Leases - In the southern areas of the province those leases not selected from permits or drilling reservations are issued only after advertisement for bonus bids. In northern areas, leases could be applied for but in practice this is not done as exploratory permits are issued in such areas.

(ii) Net Royalty Leases - The net royalty lease is a device designed to allow any operator with capital sufficient for drilling and development, but insufficient for buying oil in the ground at high prices, to

bid on proven or semi-proven Crown oil and gas rights and to pay the Crown for those rights out of subsequent petroleum production.

The term of the net royalty lease is the same as for the standard petroleum and natural gas lease. However, this term is divided into a "payout period" and a "net royalty period". For the payout period, the Department sets up a capital account against the lease which is determined by multiplying the number of wells drilled on the lease by a fixed per-well allowance advertised at the time of the sale. This capital account is amortized by crediting against it the gross income from the lease less royalty paid to the Crown during the payout period. The royalty during this interval is the regular royalty payable on standard lease production but with a minimum of 12 1/2%.

As soon as the aforementioned capital account has been retired, the lease enters the "net royalty" phase. In this period of the lease, a net lease income is arrived at by subtracting from gross proceeds:

I. Regulatory royalty with the 12 1/2% floor.

II. Lease operating expenses, including limited overhead.

III. Certain equipment replacement allowances.

This net lease income is then divided between the operator and the Crown in the proportion originally bid by the operator at the time the lease was acquired. For example, if the operator bid 65% via the net royalty lease route, rather than bidding a lump sum for a standard lease, then during the net royalty period the net lease income would be allocated 35% to the

operator, 65% to the Crown.

Net royalty leases contain the proviso that drilling must commence within 6 months of the date of issue of the lease. Offset commitments are enforced on the same basis as with standard leases, except that offsets may be called from wells drilled on adjacent standard Crown leases.

Rental and Royalty Costs. Appendix V to this submission is a statement outlining revenues to the government from lease sales, rentals and royalties, covering the fiscal years 1949-50 to 1956-57 inclusive. The Petroleum and Natural Gas Regulations 1958, (Appendix III-B) contain schedules of royalty rates and regulations concerning rentals and issuance of permits and leases.

5. Conservation.

(a) Licensing: A well under the Oil and Gas Conservation Act is defined as follows:

"Well" means any orifice in the ground, excluding seismic shot holes and structure test holes, made or being made by drilling, boring, or in any other manner, from which orifice any oil, gas or product thereof, is obtained or obtainable, or which is being so made for the purpose of obtaining any oil or gas, or which is incidental to the production thereof, or for the purpose of underground storage of oil, gas or products thereof, and includes any opening in the ground made or being made by drilling or boring for informational purposes as may be required under the Subsurface Mineral Regulations.

Any such well shall not be spudded in or deepened without a licence to do so first being obtained.

It is necessary for the department to maintain strict control on drilling with respect to the location of wells and to protect the rights both of surface owners and of owners or lessees of mineral rights. To achieve this, applications for licences must include plans of survey and surface rights agreements or proof of right of entry. Right of entry may be granted by virtue of a mineral lease where the surface and minerals are owned by the same party. In order to protect the Crown against suit for damages as a result of drilling operations, the owner of the well is required to pose a deposit as a guarantee of proper eventual abandonment

of the well and site. This deposit is not released until a surface rights clearance signed by the owner of the surface has been received by the department. The deposit is $2,500 per well, with a maximum of $10,000.00 per operator.

On receipt of an application to drill a well, the department first checks to ensure that the well is located on target in accordance with the governing spacing pattern, and that the applicant has the right to the petroleum and natural gas within the entire drainage unit. If he does not have this right in total, then no licence will be issued until he has such right or has entered into a pooling agreement with the other mineral rights owners within the drainage unit.

Survey plans forwarded to the department must be prepared from a survey approved and certified by a Saskatchewan, Alberta or Manitoba Land Surveyor, or a Registered Professional Engineer, and must show the exact location of the proposed well site in relation to any boundaries of natural or constructed features which may in any way affect the operations of the drilling of the well.

The owner of the proposed well must use a standard departmental surface lease form or a company form which has been approved by and registered in the department, unless right of entry has been granted where the owner of the minerals also owns the surface.

The application fee for a licence to drill is $50.00 per well, while the application fee for licence to re-enter is $25.00 per well.

(b) Pooling: Section 31 of the Oil and Gas Conservation Act provides that:

(1) Where two or more separately owned tracts are embraced within a drainage unit, or where there are separately owned interests in all or part of a drainage unit, the owners of such tracts or interests may pool their interests for the development and operation of the unit.

(2) In the absence of voluntary pooling the Minister may, upon the application of any interested person, make an order that a hearing be held by the board.

(3) Upon the recommendation of the board, the Minister may make an order pooling all interests within the drainage unit for the development and operation of the unit.

The regulations under The Oil and Gas Conservation Act provide that:

18. (17) Where two or more separately owned tracts are embraced within a drainage unit, or where there are separately owned interests in all or part of a drainage unit, no licence under this section shall be granted unless such interests are pooled as provided for in Section 31 of the Act.

That is to say, no licence to drill a well shall be issued unless voluntary or compulsory pooling of a drainage unit has taken place or the operator has secured a petroleum and natural gas lease from each and every owner in the drainage unit and such lease contains a provision for pooling. While most

pooling to date has been on a voluntary basis, it has occasionally been found necessary to resort to compulsory pooling to allow development to proceed in orderly fashion. A copy of a typical compulsory pooling order is submitted as Appendix VI. This is the Pooling Plan Governing Oil and Gas in the Mission Canyon Formation for Legal Subdivisions 1 and 2 in Section 31, Township 3, Range 32, west of the 1st Meridian, Hastings Oil and Gas Field.

Attached hereto as Appendix VII is a discussion on oil and gas conservation in Saskatchewan as achieved under the Oil and Gas Conservation Act and related legislation. This discussion was prepared by the Technical Co-ordinator of the Oil and Gas Conservation Board and particular attention is drawn to the detailed analysis contained therein of the role played by unitization in the achievement of effective oil and gas conservation in Saskatchewan. There are now nine unitized areas in the province and it is expected that this number will show a steady increase. The oil areas unitized to date are Dollard, Rapdan, Eastend, Instow, South Success and East Alida Beds pool of the Alida field, while gas production units have been established in the Brock, Coleville-Smiley and Hoosier fields.

A typical Saskatchewan plan of unitization, that established for the Dollard Upper Shaunavon Pool, is submitted herewith as Appendix VIII.

(c) Well Spacing: The standard regulatory spacing in the province provides for the licensing of one well in the centre of any legal subdivision of 40 acres. Numerous departures from

this regulation have been made within fields, with the result that the province now has spacing patterns providing drainage units of 10, 20, 40,80 and 160 acres. While the present trend in the industry is generally to wider spacing and fewer wells, drilling in Saskatchewan has basically been on 10 and 20 acre patterns for heavy, viscous crudes, on 40 acre patterns for medium gravity non-Mississippian crudes and shallow, thin-pay light crudes, and on 80 or occasionally 160 acre spacing for the Mississippian production in the southeast corner of the province.

Departure from the standard 40 acre spacing pattern is handled in two phases. For example, when a pool is discovered and several wells have been drilled, the operators may decide that an 80 acre pattern will probably provide the most efficient and economic means of recovering the oil. A submission is made to the department, outlining the request for revision of spacing pattern and the reasons therefor. The department then calls a public inquiry to examine the request or any objection to it, and if it is approved in principle the Minister of Mineral Resources issues an interim spacing order, which limits drilling in the area to one well on each of eight designated 80 acre drainage units within each section. During the period of the interim order, while the pool is being developed, the operators are therefore protected from having to drill offset commitments on a 40 acre pattern. However, the wells drilled during this period are limited to production at an M.P.R. (Maximum Permissive Rate) calculated as if each well were only draining 40

acres. During the early months of production, the operators then collect all pertinent information on the pool's producing characteristics to justify an increase in the M.P.R. based upon 80 acre drainage. Upon receipt of a submission containing this data, the department calls a second inquiry, and if the facts presented justify such action, the spacing order is revised by the Minister to increase rates to those applicable to permanent 80 acre spacing.

The major factors taken into account in deciding on a satisfactory spacing factor are:

(i) Gravity and viscosity of crude;

(ii) Porosity and permeability of formation;

(iii) Relation of oil pay to overlying gas cap or any underlying aquifer in contact with the oil;

(iv) Drive mechanisms operating within the reservoir; and

(v) Relative economics of wide and close spacing patterns.

The objective is always to drill the minimum number of wells which can be expected to drain the reservoir adequately.

(d) Production Control: In contrast to the practice followed in other provinces, wherein each well in a pool is allocated the same Maximum Permissive Rate (M.P.R.) based on the overall engineering and geological characteristics of the pool, the Saskatchewan Department of Mineral Resources establishes an individual M.P R. for each well, based on the pay zone encountered in that well. It is considered that during the early life of any pool,

the individual well M.P.R. provides control to limit production from any drainage unit proportionally with its share of oil in place in the pool. If it becomes obvious that due to structure and drive mechanism within the pool, certain unfavourably located wells will not be able to produce their equitable share of the total oil in the reservoir, despite the individual well M.P.R., then the operators of those wells have recourse to request unitization of the pool to protect their interest.

Upon completion of a well, an operator applies for an M.P.R., using the best data available on pay thickness, porosity, interstitial water, shrinkage, etc. in the M.P.R. form provided by the department, to arrive at a value in barrels per day which the well may produce. This application must be filed with the department no more than 5 days after the well goes on production. This "applied-for M.P.R." then becomes the controlling rate of production for the first few days of the well's operation. The department's Reservoir Engineering Division examines the application and all available pertinent data, including that used for establishing M.P.R.s for nearby wells, and establishes an official M.P.R. for the well, which is normally made effective on the first day of the month following the day of first production. All M.P.R.s are subject to review, either periodically by the department or at any time for an individual well at the request of the operator. Experience has shown that the M.P.R. established by the department may be less than, equal to, or greater than the applied-for M.P.R.

In line with the generally accepted concept that production from an oil well should be restricted if excessive amounts of gas and water are produced in conjunction with the oil, provision is made for the application of gas/oil and water/oil ratio penalty factors to the authorized M.P.R. The resulting adjusted M.P.R. is then used in actual calculation of monthly allowables.

Full details of the methods currently used in allocating and limiting production of oil and gas are to be found in the appendix to the regulations under the Oil and Gas Conservation Act (appendix III-D).

(e) Secondary Recovery Programs: With the exception of the Lloydminster area (where crude oil has been produced for over a decade), most Saskatchewan oilfields are quite young. Most of the fields have only recently reached the stage where it is possible to determine whether secondary recovery methods would be successful and economical in increasing ultimate oil recovery.

Water injection to maintain and increase reservoir pressures has been tried and has met with favourable success in several areas to date. As is noted below, a gas injection plan was tried at Coleville on a pilot basis without success, and it is too soon to assess the Success Field project.

It appears to have been generally conceded that in low gravity crude areas such as Lloydminster, secondary recovery by simple displacement using one fluid (water or gas) cannot be expected to produce spectacular recoveries. Since it is now estimated that primary recovery methods will not

achieve more than 7% recovery in these fields, the need for application of some recovery stimulus is great.

(i) Water Injection.

1. Dollard Field: The first secondary recovery project of importance in the province was the pressure maintenance operation in the Dollard field, the first oil reservoir to be unitized in Saskatchewan. This project started on a pilot scale with four water injection wells about two years ago. At the present time it has been expanded to a full scale operation consisting of 10 injection wells in a modified semiperipheral line drive. The water is injected at an average rate of 8,500 B/D. Water for injection is obtained from Viking and Blairmore formations in the area. The primary recovery for Dollard field was estimated at 10% and secondary recovery by water flood is expected to increase the total recovery to 27% of the oil in place. The Dollard field covers a surface area of about 9,320 acres and the oil in place is estimated at 212,000,000 bbls. Secondary recovery measures are expected to increase the oil recovery by 36,000,000 bbls.

ii. Steelman Field: Another secondary recovery project of importance which may become one of the most important undertakings of the future is the Steelman Pilot Water Flood. This plan is nearing completion and will be in operation shortly. The pilot plan consists of a ten acre five-spot flood to test floodability, injectivity, and various other operating problems that could be encountered in waterflooding the Main Midale Beds in the

Steelman Field. Injection water is to be obtained from the Blairmore formation and the initial injection rate will be 800 B/D at a surface pressure of 2,800 p.s.i.g. (pounds per square inch gauge).

This project is considered important because the Main Midale Beds in the Steelman field, although not yet completely defined by drilling, cover 50,000 proven productive acres. The total oil in place in the proven area is estimated at over 500,000,000 bbls.

Preliminary studies show that primary recovery of 18% of the original oil in place can be expected; water flood calculations indicate that approximately 50% of the oil in place is recoverable. Full scale water flood in the Main Midale Beds in Steelman field could increase the oil production by more than 170,000,000 bbls.

III. Gull Lake Field: A pilot flood of the Gull Lake field in the Upper Shaunavon Pool had been operating nearly a year when the subsurface water source failed and the scheme was closed down temporarily. The area involved is about 1,000 acres.

The total volume of water injected into the producing formation at shutdown was approximately 100,000 bbls. The results were encouraging but insufficient to evaluate the project. At present this undertaking is being converted to use surface water from Gull Lake.

IV. Fosterton Field: A small pilot project, started in March, 1957, is in operation in the Northwest Roseray Sand Pool near Fosterton. The area involved is a small pool covering about 350 surface acres. It consists of 4 wells forming

a portion of an inverted 5-spot with one injection well and 3 production wells. The injection rate is 1,500 BWPD and injection water is salt water produced with oil from the pool.

It is too early in the life of this project to expect any conclusive results. The results will be of a major interest and should have a decided bearing on future secondary recovery schemes in Fosterton and Success areas.

V. Lone Rock Field: A small pilot plant is being operated in Lone Rock field. The configuration is an inverted 5-spot on 20 acre spacing. Injection water is produced water which is obtained from an oil processing plant in the area. The gravity input rate is 200 bbls./day. The immediate area involved is one section. The primary recovery is estimated to be about 10% and the secondary recovery is calculated to increase this by an additional 6% to 7% of the original oil in place. If the scheme performs according to expectation and is further applied to the whole pool, additional oil recovery should be 5,000,000 bbls. This scheme is in the heavy crude area where viscosity ratios are not conducive to high secondary recoveries by water flooding.

VI. Instow Field: Operators of Instow Unit have applied for permission to inject water into the oil zone on a pilot scale in preparation for a full scale flood. The volume for a full scale flood would be 5,000 barrels of water per day.

The reservoir conditions in Instow are similar to Dollard and similar recoveries are expected. The estimated original oil in place under

proven acreage in Instow field is 65,000,000 bbls. A secondary recovery scheme by water flood could yield an additional 11,000,000 bbls. of oil.

(ii) Gas Injection.

VII. Coleville-Smiley Field: A pressure maintenance plan by gas injection was tried in the Coleville-Smiley area. After months of operation an increase in gas oil ratios in adjoining wells was noted without any noticeable increase in oil production. The scheme has been considered unsuccessful by the operator and is at present discontinued.

VIII. Success Field: Gas injection is being tried in Success Roseray Sand Pool. The injection was started last November. The scheme is in pilot stage using one gas input well. The expected input will be about 1.5 MMSCF. No data is yet available on results of the project.

In addition to the eight projects briefly described above, which are primarily secondary recovery and pressure maintenance programs, there are some fourteen salt water disposal wells throughout the province which are classed as pressure maintenance wells since water is injected back into the oil producing zone. The injection rates vary from 150 B/D up, depending on salt water available for disposal. In the Lloydminster area, the injection wells have a minimum of equipment, usually limited to filters and meters. Chemical treatment is rarely used, and gravity injection is the usual procedure. Water is often conveyed to disposal wells by truck.

In the southeastern part of the province

(especially in pools subject to water drive where increasing water cuts can be expected with time), the injection wells are much more elaborate. There is normally some system of gathering lines and injection wells are equipped with force pumps for pressure injection. Some of these injection wells were designed to handle up to 4,000 barrels of water per day.

Possible Future Secondary Recovery Methods - Saskatchewan operators are watching with considerable interest the experiments being carried out south of the border to increase recovery from oil reservoirs by two promising techniques: (1) in 'situ combustion' of a portion of the hydrocarbons, and (2) the 'miscible slug' gas sweep.

In situ combustion experiments have indicated that up to 90% of the hydrocarbons in a reservoir may be driven to wells adjacent to the input fired well, even where the reservoir has been previously water flooded. Should this technique prove economically sound in field practice, greatly increased recoveries may be hoped for, particularly in the heavy gravity crude oilfields where the relative viscosity of the crude oil tends to promote water coming, and where the latent energy content of the reservoir may have been low even under virgin conditions.

The miscible slug gas sweep experiments involve the injection of a frontal wall of propane or other liquid petroleum gases, followed by injection of natural gas. The propane dissolves in the crude oil in the reservoir, making it less

viscous and improving the permeability relationships of the reservoir rock to the crude as compared to its permeability to gas or water. The natural gas following behind can then more successfully drive the improved crude to the well bore. At the present time the necessary volumes of liquid petroleum gases are not available in the province at a price which might warrant experimentation with this technique, but it is considered possible that this situation will change in the not too distant future.

(f) Conservation of Flare Gas: The collection of flare gas has received considerable attention from the department. At present a gas collection system to pick up flare gas from oil wells producing in the Smiley area has been built and a gas processing plant is now in operation. A much larger scheme to collect oilfield flare gas in the Steelman area of southeast Saskatchewan is slated for completion in the fall of 1958. Propane, butane and sulphur will be produced as by-products and dry residue gas will be sold to the Saskatchewan Power Corporation.

C. ESTIMATES OF RESERVES AND FUTURE PRODUCTION POTENTIAL.

1. Crude Oil Reserve Estimates: The development of most of the present proven reserves of crude oil in the province has taken place during the past six years. Due to the fact that early discoveries were confined to heavy and medium gravity oils, the development of markets through the construction of refineries especially designed to handle these crudes was necessary before the fields could achieve more than token production. The

majority of fields may therefore be considered as having produced for four years or less, and are still in the very early stages of depletion. As a result, reservoir studies using depletion data do not provide trustworthy estimates of oil in place and expected recovery thereof. Wherever possible, of course, decline curves are used as a guide and check on preliminary volumetric calculations.

While it is fully expected that pressure maintenance and secondary recovery programs will be applied to many reservoirs in the province to improve the ultimate recovery of petroleum minerals from them, it is too early to estimate the success which such programs may enjoy. In all of the following reserve estimates, therefore, no allowance has been made for improved recovery due to artificial stimulation, except in the one instance of the Dollard field, which is presently undergoing pressure build-up by water injection. Even in this case, the ultimate success of the program cannot be guaranteed, but since it shows excellent promise after two years of operation (including pilot flood period), the theoretical resulting increase in reserves has been included in the department's 'proven recoverable' reserves.

THE CHAIRMAN: What do you mean -- sort of pilot basis?

MR. WILLIAMS: Yes. I believe that water was interjected into four wells.

TABLE X: Crude Oil Reserves

	Proven	Additional Semi-Proven	Addit. Probable	Addit. Possible	Total
	(millions of stock tank barrels)				
LIGHT GRAVITY (Above 30° API)					
In place	1,611	491	3,750	7,420	13,272
Recoverable	302	97	750	1,492	2,641
MEDIUM GRAVITY (20° - 30° API)					
In place	2,616	615	-	211	3,442
Recoverable	3337	69	-	15	421
HEAVY GRAVITY (Up to 20° API)					
In place	996	-	-	150	1,146
Recoverable	36	-	-	8	44
Total in place	5,223	1,106	3,750	7,781	17,360
Total recoverable	675	166	750	1,515	3,106

Notes to Table:

Proven - includes volumetric estimate of oil in drainage units having wells capable of commercial production, plus that in undrilled drainage units within established pool boundaries, which are offset by commercial production. Only one drainage unit was assumed to be proven under each wildcat commercial producer.

Semi-Proven - includes a volumetric estimate of oil assumed to exist within a reasonable distance of proven reserves, from studies of geological, seismic, and production data.

Probable and Possible - see detailed discussion of derivation of these reserves in Appendix IX submitted herewith.

Recoverable - for proven and semi-proven reserves, the recovery factor used for any pool is that which, on examination of geological, production, and pressure decline data, the department staff felt was most appropriate for the pool. In the probable and possible estimates, recovery factors had to be guessed, since nothing is known about the characteristics of these as yet undiscovered potential reservoirs. Recoverable reserves are estimated as of the end of 1957, and have been reduced by 37 million barrels of production taken to that date.

MR. PATTERSON: May I interrupt you at that point on this table of Crude Oil Reserves, for the Commission's information we had evidence in Calgary from the Canadian Petroleum Association with respect to Saskatchewan reserves and we found in comparing, for example, the proven reserves given to us by C.P A. for Saskatchewan they had a figure of 420 millions of barrels whereas yours, I believe, total something in the neighbourhood of 675

Now, we would appreciate it if you and your advisors, the gentlemen on your staff, could explain to us how the discrepancy arises and the reasons in thinking. I think we can deal with simply the proven for the moment. I have the technical methods from reading the submission used both by yourselves and the C.P.A. in defining the word "proven", we have a definition that seems similar. Would you mind discussing that and telling us how that comes about?

MR. WILLIAMS: I believe the Commission has already received a prior submission from the C.P.A. concerning the differences The Department engineers and the C P.A. engineers met to try and resolve the differences, or the reasons for the differences, prior to this hearing, and from that discussion it became obvious that the discrepancies were basically in the younger fields where opinion can vary considerably on the recovery factor which may be obtained from those fields. There were, of course, also indications that there were some differences in the effective pay thickness and recovery factor used throughout these fields, although the Department does not have access to the full C.P.A

calculations. Basically, though, the differences are a matter of opinion in those fields in which detailed calculation from tabulation curves cannot yet be drawn

I think I should mention that since our reserves are considerably more at variance with the C.P.A. figure than are the figures of the Alberta Conservation Board, in explanation of that I should point out in Alberta the m.p.r., the individual field or pool is established after submission of detailed engineering data by the industry and by the Board engineers, following which there is a certain amount of compromise and the estimates of reserves and producibility of the various fields and the Alberta Board does, therefore, have access to industry's thinking on recoverability and oil in place in these fields.

In Saskatchewan on the individual m.p.r. operation that we use there is no need for this. I believe it is three times a year they meet in Alberta to establish pool m.p.r's. Therefore, we have not direct contact with industry on this particular type of information.

MR. PATTERSON: Would you say that there is a difference in the, perhaps, optimism or conservatism in approach to the problem as put forth by C.P.A.? Do you think you are being more optimistic in regard to some of these earlier or younger fields than perhaps they are?

MR. WILLIAMS: Undoubtedly that is correct. We are more optimistic than the industry as a whole, although there is a small amount of variation in the actual definitions involved.

MR. PATTERSON: Out of discussions you had with the C.P.A., did the question of the amount of gas and oil and water ratios have an effect on the C.P.A.'s reserves as compared to yours? Were they cutting them down at all by reason of that?

MR. WILLIAMS: Yes, I understand that the C.P.A. did reduce their recoverability due to production at high water oil ratios, where the Department may have used an overall recovery factor based on general characteristics of the pool.

THE CHAIRMAN: That raises a question in my mind. How can you consider these energy sources from a national point of view when you get differences of estimates such as you disclosed? You gave some reasons for that. You also stated, as I recall what you did say, that you don't have access to industry's figures. Do you think in connection with natural gas and oil, the statistics that you can go on in the Province--please don't misunderstand me, I am not belittling the work of the Province one iota; I don't mean it that way. I mean, as far as I can see I don't think that there is adequate bringing together in our country as a whole of uniform methods of estimation, co-operation, or co-ordination statistically with industry and with various governments which is necessary if one is going to think in terms of a national policy as the Minister spoke about earlier this morning. How can you properly deal with a problem on a national basis if the parts that go into it to make up the whole are estimated or put together on a different formulae or bases?

MR. WILLIAMS: I think I may have given a slightly wrong impression there, Mr. Chairman. We have all of the information on the wells and fields in this Province that the industry has at their command. When I said that we did not have access to the industry's figures, I merely meant to their detailed calculations for this particular submission. The C.P.A. Reserves Committee, I understand, are sworn not to divulge their individual pool calculations to anyone else, either in the industry or the government. I believe that is part of their set-up. That is the way they are able to get co-operation among their members to arrive at figures of this nature. Therefore, we are not quarrelling with that at all. We are not in a position to in detail say in this particular point you have differed from us this far and therefore perhaps we are wrong -- we or you are wrong. We have not been able to establish that, although our figures were made available to the C.P.A.

THE CHAIRMAN: I see what you mean. Carrying that a little bit further, suppose you did have a National Energy Board that has been talked about, and suppose it had, as part of its responsibilities or functions, the collation, the gathering and collation of statistical material -- confine it for the moment to oil and natural gas -- would there be hesitation on the part of the Province of Saskatchewan in furnishing the relative statistics to that body?

MR. WILLIAMS: No, none at all.

THE CHAIRMAN: I mean, this secrecy

we are speaking about is more from the point of view of not disclosing to a competitor or another producer who is a competitor a discovery until the lapse of a certain amount of time to enable him to capitalize on the discovery?

MR. WILLIAMS: I believe that is the intent.

THE CHAIRMAN: Would it or would it not be advantageous to the Province if there were that gathering together of statistical information from industry from the various Provincial Governments and, in fact, from all relative sources, and that statistical information were maintained not only from the point of view of Canada and all various Provinces, but also on a world-wide basis, so the world oil situation could be known in a relatively short time. The statistics would be there. Would or would not such a thing be helpful in the administration of your respective statutes in the Province of Saskatchewan?

MR. WILLIAMS: Yes, certainly, Mr. Borden, but I believe that situation will inevitably evolve here. Our differences of opinion on these reserves at the present time basically stems from the thought the oilfields are less than 4 years old. They are in that youthful stage where opinions can vary considerably. I would venture to suggest if we were to have no further discoveries in Saskatchewan from this day forward, then within the next 3 years we would have practically a unanimous opinion on the recoverability of the presently known reserves in Saskatchewan by the end of that time. You would have more productive histories than our figures or C.P.A. figures. It would come together from a

fuller understanding of the operation of these fields. I think it is just a matter of the youth of our industry and our knowledge of our petroleum reserves that is responsible for the discrepancy at the present time. I feel we are rapidly coming of age as far as that is concerned and would be able to provide quite accurate estimates of this nature within a very short period of years.

THE CHAIRMAN: During the interim I can quite understand the problem you face. I can see no difficulty in a National Authority, whatever you want to call it, correlating these figures and making your own appraisal of that, or saying in the total that it is on a different basis in Saskatchewan than Alberta. As you become adult -- let us put it that way -- would there be any reason why such a marriage should not take place?

MR. WILLIAMS: No, none at all.

THE CHAIRMAN: I think it would be helpful, would it not, to Saskatchewan to know what the experts consider to be proven reserves of natural gas in the Province of British Columbia, for instance?

MR. WILLIAMS: Yes; of course, those figures are available to us in the C.P.A. publications by regions.

THE CHAIRMAN: That is by industry?

MR. WILLIAMS: Yes.

THE CHAIRMAN: There is a difference between that and the Government's estimation?

MR. WILLIAMS: Yes.

THE CHAIRMAN: That existed in Alberta. It exists here with your figures. We have not seen

the ones from British Columbia yet. We have not had the British Columbia Government's submission, but I assume that the same thing would be true there. I just wonder if we are not somewhere deficient in the sum total of our statistical information from the best use of government throughout the country and for the best use of industry?

MR. WILLIAMS: It probably could be improved.

THE CHAIRMAN: Thank you.

MR. WILLIAMS: In Place - estimates of oil in place under virgin conditions.

The weighted average recovery factor for all proven reserves from these estimates works out to be 14.6% of estimated original oil in place. This is obviously a very conservative estimate, and might, without too much imagination, be stretched to 35% if possible secondary recovery programs are considered. Using such a recovery factor only in connection with proven and semi-proven reserves, the estimated total recoverable oil in all categories in the province including the estimates of probable and possible recoverable oil would be 4.5 billion barrels.

2. Forecast of Future Development of Oil Reserves: Figure I in Appendix X attached shows the anticipated rise in gross recoverable reserves. It should be noted that the increases are not due wholly to new discoveries but that improved recovery efficiencies due to secondary recovery operations have been taken into consideration.

The trends were established by plotting the reserve estimates for the past four years. It

was felt that the rate of increase of recoverable reserves in the present producing horizons, i.e., Cretaceous, Jurassic and Mississippian, will tend to level off and continue to do so. It was also felt, however, that discoveries in the lower Paleozoic would tend to offset any decline in rate of increase in recoverable reserves for at least the next three years, but that thereafter the rate may not be as great.

3. Estimated Future Oil Production Potential: Due to fluctuations in crude oil markets it is extremely difficult to forecast future production. However, in an attempt to give a guide, the estimated productive potential, assuming an unlimited market, but within normal M.P.R. control, is given in Table XI.

The ratio of estimated potential to net recoverable reserves was established from peak production and reserve data. Since the rate of production is expected to exceed the rate of discovery within the next 5 - 10 years this ratio was declined at a constant rate to establish estimated future production potential.

TABLE XI: Estimated Yearly Oil Production Potential - By Crude Type

(Millions of Barrels)

Year	Light	Medium	Heavy	Total
1958	28.8	29.0	4.0	61.8
1959	35.6	34.5	3.7	73.8
1960	42.2	38.6	3.5	84.3
1961	48.7	41.0	3.4	93.1
1962	55.2	42.0	3.2	100.4
1963	59.6	42.4	3.0	105.0
1964	61.6	41.5	2.8	105.9
1965	62.5	40.5	2.6	105.6

4. Gas Reserves Estimates

(a) Non-Associated Gas

Discoveries of dry gas fields not associated with crude oil in Saskatchewan have been limited to a few reservoirs having relatively low reserves and productive capacity, along the western boundary of the province. All commercially interesting finds of this nature have been in shallow Cretaceous formations, locally named the Colony Sand at Lloydminster, the Viking and Unity Sands at Unity, the Viking Sand at Brock, and the Medicine Hat Sand in the Hatton Field. In addition to these reserves, Viking Sand gas is being produced in the Coleville-Smiley field. This latter gas is associated to a minor extent with the Smiley-Dewar and Eureka Viking oil pools in structural lows which exists in the productive Viking Sand formation which extends almost continuously from the Alberta border through Coleville to Dodsland.

The gross volume of recoverable reserves of non-associated natural gas in the province, including that in the aforementioned Coleville-Smiley trend, has been estimated at 591 billion cubic feet, and is shown in Appendix X, figure II.

Since no other geological formation has shown particular promise of being productive of non-associated natural gas, the estimate of expected growth of gross proven reserves has been limited to the expectation that further Cretaceous gas accumulations will be located. No further major discoveries are expected in this geological strata, but some additional reserves are expected to be found in the general area of Coleville and Swift

Current, and possibly in northeastern Saskatchewan.

(b) Oil Field Gas: The potential volumes of oil field flare gas available for collection and pipelining to market are somewhat more promising, though to date this type of gas has not been a substantial contributor to the province's gaseous fuel requirements. At the present time, only the Smiley-Dewar Viking oil pool and the Coleville Banff oil pool have gas collection systems feeding the domestic market. Two other pools have gas collection systems, but the gas is being re-injected into the reservoir (Success and South Success). At the present time, Steelman Gas Ltd. is constructing a 25 million cubic foot per day gas collection and processing plant in the Steelman field, and it is expected that the residue gas from this plant will be piped away to market rather than being re-injected into the reservoir. The pools in the Alida-Nottingham area will also eventually contribute residue gas for domestic consumption, though there is some possibility that this gas will be recycled for some time before it becomes available for sale.

Any forecast of availability of pipeline gas from oilfields must of necessity be somewhat arbitrary, since many assumptions must be made in carrying out the necessary reservoir study to estimate the fluctuation in producing gas/oil ratio as depletion of the reservoir takes place. For instance, institution of a pressure maintenance scheme in a reservoir operating normally under only dissolved gas or depletion type drive might reduce daily gas production to 50% and extend the life of the reserves

accordingly.

At the present time, it is estimated tha. a total reserve of 445 billion cubic feet of oilfield gas can be economically collected and transported to market over the life of the fields now developed in the province. In this estimate, only the Steelman, Alida, Nottingham, Coleville-Bannf, Smiley-Dewar Viking, Cantuar and Success fields have been considered. While collectively large volumes of gas are being flared from other fields, the poor economics of collection prevent their consideration at the present time.

Appendix X, figure III, represents an estimate of possible availability of gas from the aforementioned potential oilfield collection systems over the next thirty years. In developing these curves, it was assumed that:

(i) Steelman would be subjected to a complete 5-spot waterflood;

(ii) Success field will be subjected to gas and water injection until depletion in 1975;

(iii) No gas injection will be undertaken in Cantuar, Nottingham, or Alida, and

(iv) Coleville-Banff compressor installations will not be materially increased.

These assumptions were made only as a basis for developing one possible set of gas production curves,and as it may be necessary to revise most of the assumptions within the next twelve months, the curves should not be accepted without considerable reservation. The overall reserves should be reasonably accurate, but the time at which they may become

available is extremely difficult to evaluate at the present stage of development.

In addition to these known reserves of associated gas, it is estimated that in the order of 1.7 trillion cubic feet of associated 'flare' gas will be economically collectable from the ultimate oil in place expected to be discovered in the province.

The assumptions used in this calculation are:

(i) Ultimate oil in place - 17×10^{9} stock tank barrels;

(ii) Average gas in solution - 500 cubic feet/barrel;

(iii) Only 30% is economically collectable;

(iv) Before a gas collection system is installed, 25% of the collectable gas is flared;

(v) Of the remaining gas, 10% is utilized as lease and plant fuel.

Those assumptions are not necessarily correct at all, but merely the ones used in making these calculations.

The figures given here are $17 \times 10^{12} \times 500 \times 0.30 \times 0.75 \times 0.90 = 1.7 \times 10^{12}$ cubic feet ultimate reserve.

In summary, then, the gas reserves picture for the province is as follows -- I do not think it should be quite as positive -- our estimate is as follows:

Present proven recoverable dry gas	-	591 billion c. feet
Present proven recoverable oilfield gas	-	445 billion c. feet
Total		1,036 billion c. feet

Possible additional recoverable dry gas	-	140 billion c. feet
Possible additional recoverable oilfield gas	-	1,700 billion c. feet
Total		2,876 billion c. feet

MR. PATTERSON: Mr. Williams, again are we faced with much the same reasoning by which you explained the discrepancy between this and the information we had from the C.P.A. as to gas reserves in Saskatchewan; that is, that because the estimate of the additional recoverable oilfield gas depends on your estimate of the oil and to the extent that you and the C.P.A. differ there, a difference as to oilfield gas is bound to occur. Is that perhaps an explanation for the difference or are there other points of difference?

MR. WILLIAMS: I think that has not been given too much consideration in Saskatchewan by the C.P.A. engineers, but the proven reserve estimates by the C.P.A. and by the Department for Gas was as close as any two consulting bodies can ever hope to arrive without consultation prior to the issuance of the figures, so we feel there is no basic difference between our two figures there, and I believe the possible additional figure is not comparable because the C.P.A. figures were for the entire Western Canadian basin and not confined to Saskatchewan in that particular figure.

MR. PATTERSON: Thank you. That brings us, I think, to the end of the part which Mr. Williams is going to read for us, and perhaps, if it is convenient, because of these matters falling into different parts, there are a few questions

I might deal with in regard to this matter now.

Sir, where, in dealing with Saskatchewan, do you feel that the main oil reserve development will be; in the southeast or at the western side of the Province?

MR. WILLIAMS: Future oil development?

MR. PATTERSON: Future oil development.

MR. WILLIAMS: Generally in the southeast.

MR. PATTERSON: And your development does not have the trend towards the west that we were told about to quite some extent in Alberta?

MR. WILLIAMS: Well, the appendix outlining the expected discoveries in the future in the deeper than the Mississippian formations does give a certain amount of credence to discoveries in Western Saskatchewan in the Devonian and considerably further west than the present Mississippian development. We do feel that the bulk of the reserves still to be located will be in the Cretaceous and Jurassic developments and not extending, in our geologists' extimates, to the western boundary of the Province.

MR. PATTERSON: I wonder if there are just a few small bits of emplification, if you wouldn't mind turning to page 8 for me and, on that page, in the bottom paragraph, in the second sentence, you say: "As a result of co-operative action between several producing companies, a pipeline was constructed from Fosterton to link up with the Interprovincial Pipe Line at Regina".

Now, could you tell me the name of the pipeline and who the several producing companies are?

MR. WILLIAMS: That statement may not be exactly correct insofar as the participation of the South Saskatchewan Pipe Line, which is the pipeline referred to. What was intended there was the fact that the partnership of the companies in the Fosterton and Cantuar and Success fields -- do you want their names?

MR. PATTERSON: Yes, if you would not mind.

MR. WILLIAMS: Mobiloil of Canada, Woodley Canadian and what used to be Southern Production, which is now Sinclair Oils, all were interested in developing markets for the crude from the Fosterton, Success and Cantuar fields, and they were, between them, responsible for the erection of a refinery and the construction of a pipeline.

However, to what extent each or any of them may have participated in the pipeline and the refinery's construction ---

MR. PATTERSON: You do not know?

MR. WILLIAMS: I am not conversant with that.

MR. PATTERSON: That is, the Minneapolis-St. Paul refinery may be owned by one or all or some of those firms that you mentioned?

MR. WILLIAMS: Yes.

MR. PATTERSON: On page 9 there is mention of a short pipeline to move light crude into the Interprovincial Pipe Line at or near Coleville. Is there a name for that one, and do you know whose that is?

MR. WILLIAMS: That is Mid-Saskatchewan Pipelines.

MR. PATTERSON: Was that another pipeline

that Producers have an interest in?

MR. WILLIAMS: Yes.

MR. PATTERSON: Turning to page 14, you mention that the Oil and Gas Conservation Board may have referred to it certain things, and one of those is any other matter relating to oil and gas conservation or pipelines. Now, would you give us an idea of what kind of problems and the jurisdiction you would expect the Conservation Board to have over pipelines and, if there are examples of that kind of thing, can you tell us what policy has evolved in regard to pipelines through the Board's hearings?

MR. WILLIAMS: I think that matter might better be answered by our solicitor, who is Secretary of the Oil and Gas Conservation Board.

MR. PATTERSON: Thank you.

MR. GEBHARD: One indication of what might be handled there was a hearing on the reserves of gas, I believe, in the Coleville area, and they used the basis for that, I believe, to market the gas to the Saskatchewan Power Corporation, as I recall. That is one example.

I would think that any matter referring to oil and gas conservation in any way could be heard before the Board if the Minister deemed it to be advisable.

MR. PATTERSON: Would you envisage the Board, under your legislative set-up, as being interested in ultimate markets and the question of price and reviewing contracts and things of that kind?

MR. GEBHARD: The Oil and Gas Conservation Board really is established as an advisory body to

the Minister and it has no administrative functions as such.

THE CHAIRMAN: May I interrupt there? You say it has no administrative functions, as such; but if the Oil and Gas Conservation Board were considering an application for the export of natural gas from the Province of Saskatchewan, would the Board, in making its recommendations to the Minister, as I take it the procedure would be, inquire as to whether or not that export permit should or should not be granted and take into consideration the price at which that gas or oil is to be exported from the Province, or would that be wholly a decision resting with the Executive, as such, as an administrative act?

MR. GEBHARD: No, I believe the Board definitely would consider price as being one of the factors which it would take under advisement in making recommendations to the Minister. It would look at all factors which it considered to be relevant in any way.

THE CHAIRMAN: Thank you. Excuse me, Mr. Patterson.

MR. PATTERSON: On page 17 -- and again, perhaps, Mr. Gebhard, you could assist me in this -- you say the Utilities Companies Act provides for a local government board. Now, are there several local government boards or is that a name for one commission?

MR. GEBHARD: The local government board is a distinct body; that is, it is distinguishable from the Oil and Gas Conservation Board. There is no relation between those two bodies. The local

government board, in addition to powers which it exercises under the Public Utilities Companies Act, I believe also exercises certain powers, particularly in regard to municipal governments over borrowing and things of that nature, so that ---

MR. PATTERSON: In other words, it is not solely a public utilities commission?

MR. GEBHARD: No. I think the answer is no.

MR. PATTERSON: And amongst those powers you mention that it may declare a purchaser of petroleum or natural gas to be a common purchaser and a pipeline company to be a common carrier. Has that power been used?

MR. GEBHARD: Not to my knowledge. I do not believe it has ever been used.

MR. PATTERSON: Under what circumstances, if you can tell us, would you envisage that such power might be used?

MR. GEBHARD: Well, I think you would have to look at the terms of the Act itself. It sets out what would be the conditions precedent leading up to that.

MR. PATTERSON: And this matter of a pipeline company being a common carrier: do you consider that to include a gas pipeline company?

MR. GEBHARD: Yes, it includes both oil and gas.

MR. PATTERSON: I am puzzled a bit by the words "common carrier" and their use in relation to gas pipelines. Is it your thinking of the legal magic as to the words "common carrier" that you

consider those as applicable in the case of gas pipelines?

MR. GEBHARD: We realize there may be some distinct differences in the way that would be applied to various factors, but we think it might very well be a case where gas pipelines would come under the same provisions, definitely, as an oil pipeline company would.

MR. PATTERSON: Then going on to the further power of fixing the price paid for natural gas at the wellhead, does the Board have the power to fix the price paid for oil at the wellhead?

MR. GEBHARD: No. That particular section only deals with gas.

MR. PATTERSON: Has it been used?

MR. GEBHARD: Yes. Well, now, I would not be sure that this particular section has been used, but I do know the local government board has exercised its jurisdiction. There is more than one part to the Public Utilities Companies Act and I think it is under the provisions dealing with franchises granted by municipal corporations that the local board has acted and not under this particular section.

I understand there was one instance that the Board acted under that section at Unity, Saskatchewan.

MR. PATTERSON: In assuming that Saskatchewan had natural gas for export outside its boundaries, would you say that when contracts are made with individuals outside the boundaries of Saskatchewan or any other province that it would be a reasonable exercise of the Provincial jurisdiction

to fix the price to be paid at the wellhead, when it is being used outside?

MR. GEBHARD: Well, of course, that is a legal question. I would presume the Provincial Board would have jurisdiction over the price of gas in any instance.

MR. PATTERSON: In deciding that, we would get off into constitutional law?

MR. GEBHARD: Yes.

THE CHAIRMAN: Well, it is all set out under Sections 38 and 39, but that does not give any guidance, with all due respect, as I see it, as to what would lie behind the declaration by the local government board that a certain organization or company is a common purchaser or a common carrier. There is nothing here that I can see to indicate on what basis that is made. That was the purpose of Mr. Patterson's question and I do not see anything in the Act that gives any guidance on it. Perhaps you know something.

MR. GEBHARD: I believe there are ---

THE CHAIRMAN: Let me put it this way: is it designed to fit the circumstances from the point of view of the manner in which gas is handled in the Province of Saskatchewan through the Saskatchewan Power Corporation? You see, we are a little bit puzzled. Under the Pipe Lines Act of Canada, the Board of Transport Commissioners, which I think is the body which has authority, can declare an oil pipeline to be a common carrier. It has the power to do that. However, there is no provision in that legislation for declaring a gas company as a common carrier. Then you get into the situation

in Alberta with the Alberta Trunk Line, which has not yet been declared a common carrier and yet its whole function at the moment is the common carrying of gas.

Now we come to Saskatchewan and we get a situation where you not only have the right to declare, by statute, an oil pipeline as a common purchaser or common carrier, but also a gas line. There is a wide variation between the various fields of legislation, and the purpose of Mr. Patterson's question was to try to find out why. Is it to meet a Provincial situation, such as the Saskatchewan Power Corporation?

MR. GEBHARD: No, I don't think that is the particular reason. I imagine the intent here in our legislation is that there did not seem to be any reason why gas pipeline companies should not be subject to the same provision as oil pipeline companies.

THE CHAIRMAN: Well, provided they did not own the gas. There is a big difference if they are the owner of the gas that goes through the line as distinct from the oil pipeline company, which takes its oil from anybody and delivers it at the other end, the same oil or oil of equal quality. Perhaps it is academic.

MR. PATTERSON: Those are all the questions I have with regard to the point we have now reached, Mr. Chairman. If the Commission has further matters which it wishes to review now or perhaps later ---

THE CHAIRMAN: I think you did answer that the Province had fixed, the local government board had fixed the price at the wellhead in one

or two instances in Saskatchewan?

MR. GEDBHARD: Yes.

THE CHAIRMAN: Under this Section 39?

MR. GEBHARD: Yes. In one instance under Section 39 and I believe the other instance was under Section 59. Now, I am not sure of the section.

THE CHAIRMAN: No, it would not be 59.

MR. GEBHARD: Or 55; in the 50's.

Section 55 is the section I was thinking of. It might not directly deal with the matter, but apparently it did become involved.

THE CHAIRMAN: Really, that Section 39 could be the basis of what we were speaking about a little while ago, Mr. Minister, where some people have advocated a two-price system, the dedication of certain fields to the local consumer and the fixing of the price at the wellhead and the dedication of certain fields or a proportion of them for export out of the Province.

MR. BROCKELBANK: Are these actually two-price systems, sir, or are they based on contracts which have been in existence?

THE CHAIRMAN: Well, of course, you do get--

MR. BROCKELBANK: -- that have been amended from time to time, probably?

THE CHAIRMAN: There are those advocates who say the fact of the export of oil or gas outside the country creates a demand, the demand creates an increase in the price and the local consumer thereby suffers. I do not say I hold to that theory but that is a proposition that has been put up to us and, therefore, the only way to protect the local consumer is by a domestic price as distinct from an export price. But, I assume, it is impossible to say whether any of the legislature had that in mind in inserting that provision.

MR. BROCKELBANK: I do not think so; it probably could be used.

THE CHAIRMAN: The dinner is laid.

MR. GEBHARD: That Section 39, I believe, is now Section 30. I do not know whether you have the amendments inserted. I do not believe there is any difference in the wording.

THE CHAIRMAN: It is substantially the same.

MR. COMMISSIONER HOWLAND: I would like to ask a question about this wellhead price. What was the purpose of establishing a wellhead price? Was it because the thought was that the consumer was not getting a square deal?

MR. BROCKELBANK: Well, Mr. Howland, I am not too sure of my facts on this case but as I remember it, the wellhead price was actually increased. This was rather a peculiar situation where the wellhead price, under certain agreements, was set very low and the wellhead price was increased slightly. What happened to the consumer's price -- I am informed there is no change in the consumer's price.

[illegible]

MR. COMMISSIONER HOWLAND: It was absorbed in the distribution somewhere. Have you had any difficulty in the establishing of minimum of prices from the point of view of conservation. I understand the conservation practices are sometimes costly. The minimum price of gas has been established and then there is difficulty in order to get proper conser vation practices. Have you had any experience along that line?

MR. BROCKELBANK: No, we have not taken any action in that regard except the Power Corporation announced a policy some years ago they would purchase gas from any field where it could be economically collected. I believe certain actual prices were mentioned for the purposes of assuring the people who discovered and explored the field that they would have a market. There has been no action taken in any legislation in that regard.

MR. COMMISSIONER HOWLAND: Does the Saskatchewan Power Corporation, being the common purchaser as I understand it, correct me if I am wrong, but they do really purchase all the gas?

MR. BROCKELBANK: That is right; with a couple of small exceptions, two or three.

MR. COMMISSIONER HOWLAND: When you buy you buy from different fields possibly at different prices by reason of the times when you make the contract. How do you price it in selling? Do you take a common price and tend to serve whole communities at the same rate or how do you mix up the various bag of prices and arrive at a sale price in particular places?

MR. BROCKELBANK: Mr. Howland, I might make

a very poor attempt at answering the question. The last part of our presentation in regard to gas will be presented by the Hon. Mr. Brown and I expect he will have the general manager of the Power Corporation here so if you will reserve your question for that time I will be interested in the answer, too.

THE CHAIRMAN: Gentlemen, I think we might now adjourn until 2 o'clock this afternoon.

---Whereupon the hearing adjourned at 12.20 p.m. until 2 p.m.

---On resuming at 2 o'clock p.m.

THE CHAIRMAN: Mr. Patterson, is the gentleman here who is going to continue on with Part II?

MR. PATTERSON: Mr. Brockelbank is going to, I understand.

Before we proceed with the reading of Part II Mr. Williams advises me he would like to make a brief correction to a statement he made in regard to the Mid-Saskatchewan Pipeline. I think he advised us it was owned, he considered, by producers in that area. I believe, in fact, it is totally owned by Royalite. Is that correct?

MR. WILLIAMS: Yes.

MR. PATTERSON: If we can then proceed, Mr. Minister, with Part II - Transportation and Marketing, at page 41.

MR. BROCKELBANK: Introduction: This part of the submission is divided into two main sections. The first deals with various questions related to the transmission of crude oil by pipeline, including the regulation of provincial pipelines, the question of jurisdiction as between the Dominion and the Province, and also the question of the regulation of pipeline tariffs.

The second deals with marketing. In particular refinery operations and present markets are described, and an attempt has been made to assess the market outlook for the various types of Saskatchewan crude oil in relation to estimated production rates, through to 1965.

A. OIL PIPE LINE TRANSMISSION:

1. Saskatchewan's Pipeline Network: In general terms the movement of oil in Saskatchewan is from west to east. The Interprovincial Pipe Line enters the province northwest of Kerrobert and extends for more than 400 miles in a southeasterly direction through Rosetown and Regina to enter Manitoba just west of Cromer. With a few exceptions such as the Lloydminster and Wapella fields, Saskatchewan's major oil producing areas, as well as Saskatchewan refineries, are linked by pipeline with the inter-provincial line. Saskatchewan oil enters the Inter-provincial stream at three main points: (1) just east of Kerrobert from the Coleville-Smiley area, through a 33-mile trunk line of the Mid-Saskatchewan Pipelines Limited; (2) at Regina from the Dollard, Bone Creek, Gull Lake, Fosterton and Success areas in the southwest through a 160-mile trunk line of the South Saskatchewan Pipe Line Company; and (3) at Cromer, Manitoba from the Midale, Steelman and Alida areas through a 185-mile combined trunk line system of the Westspur Pipe Line Company and Producers Pipelines Limited. Fifty miles of covering and transmission lines have been built by Trans-Prairie Pipelines Ltd. to link the Weyburn field to this trunk line.

At three other points the Interprovincial Pipeline is tapped to provide crude supplies for Saskatchewan refineries. From a point on Interprovincial near Milden, Saskatchewan a connecting line extends northeastward nearly 57 miles to supply the Royalite Hi-Way Refinery at Saskatoon. From Stony Beach a line extends from Interprovincial southwestward for 22 miles to supply the British American

[illegible]

Refinery at Moose Jaw. Both the Imperial Oil and Consumer Co-operative Refineries at Regina are supplied from Interprovincial.

Apart from the Interprovincial Pipeline, Saskatchewan is served by a total of more than 400 miles of trunk oil pipe lines and by over 450 miles of gathering lines and this network is being rapidly extended and improved. Over $5,000,000 will be spent in 1958 in extending the system, mostly on constructing new gathering systems and extending present ones. The bulk of the work will be done in the Weyburn-Midale-Steelman areas, although some extensions are planned in the gathering systems in southwestern Saskatchewan as well.

THE CHAIRMAN: Could we stop there for a moment? Would you be good enough to tell us Mid-Saskatchewan Pipelines Limited, South Saskatchewan Pipeline Company, Westspur Pipe Line Company, Producers Pipelines Limited, they are all Provincial Companies?

MR. BROCKELBANK: No, Westspur is a special act company, an interprovincial company.

THE CHAIRMAN: Special Act of the Parliament of Canada?

MR. BROCKELBANK: That is right.

THE CHAIRMAN: The others are all Provincial companies and not inter-provincial companies?

MR. BROCKELBANK: Yes.

THE CHAIRMAN: Trans-Prairie?

MR. BROCKELBANK: It is Provincial.

THE CHAIRMAN: Are these Provincial pipelines privately owned?

MR. BROCKELBANK: Yes.

THE CHAIRMAN: All privately owned?

MR. BROCKELBANK: Yes.

THE CHAIRMAN: By some of the larger pipeline companies?

MR. BROCKELBANK: Trans-Prairie is pretty well purely a Pipeline Company. Producers is owned by the same people, the same people who own Westspur but it is not a subsidiary. It is owned by the same Company.

THE CHAIRMAN: Is Westspsur Imperial?

MR. BROCKELBANK: It is owned by a number of companies. Imperial is one of them. South Saskatchewan is owned by producing Companies, principally Mobile and Woodley Canadian and Sinclair. Mid-Saskatchewan, which goes from the Smiley field into the Inter-provincial and the Saskatoon Pipeline which goes from Milden to Saskatoon to the Royalite, I think are both wholly owned by Royalite.

THE CHAIRMAN: Thank you very much.

MR. PATTERSON: The South Saskatchewan is a Delaware Company licenced under your Provincial Companies Act, one of those, I believe, is in that situation.

MR. BROCKELBANK: I don't know.

MR. TYREMAIN: That is correct. Westspur Pipeline Company is a subsidiary of Producers Pipeline Company.

MR. BROCKELBANK: Now?

MR. TYREMAIN: Yes.

MR. BROCKELBANK: Shall I proceed?

THE CHAIRMAN: Yes, please.

MR. BROCKELBANK: 2. Regulation of Provincial Pipelines: With the development of several major oil reservoirs in the province, the matter of efficient and economical transportation of petroleum and natural gas became a matter of vital importance. To ensure the orderly development of the necessary pipelines to provide this transportation, The Pipelines Act, 1954, was passed in March of that year. The Regulations under this Act were later promulgated by Order-in-Council and came into effect on June 17th, 1955. The Act and Regulations thereunder embody controls on pipelines situated wholly within the province. It is administered by the Department of Mineral Resources, and covers every pipeline for the transportation or conduct of oil or gas, and every pipeline for the transportation or conduct of water incidental to the drilling for or production or manufacture of oil or gas.

Before any person may commence construction of a provincial pipeline, he must first apply for a construction permit and obtain such permit from the Minister.

This, however, does not stop a person from making the preliminary survey necessary to establish the general route of the line. If he experiences difficulties in obtaining permission from the landowners on the intended route he may obtain the consent of the Minister to perform such preliminary duties as are required to fix the site of the pipeline.

Certain types of lines, such as gathering systems, flow lines, service lines, sites for tanks

and tank batteries, etc., are exempt from the jurisdiction of all portions of the Act except those dealing with highway crossings and with expropriation. Any pipeline not more than ten miles in length may similarly be exempted, provided that application is duly made and the Minister deems it to be in the public interest to authorize such exemption.

A person making application for a construction permit must do so in accordance with certain requirements set out in the regulations. It is necessary that certain other parties affected by the line be given preliminary notice and their approval received before a construction permit be granted. For this reason the following procedure is followed:

(a) A notice of application is usually advertised in the local newspaper and the Saskatchewan Gazette to invite any opposition to the application. If there is an opposition, a public hearing is called and the matter referred to The Oil and Gas Conservation Board for a decision. This notice may result in counter-application being filed. If there are no valid arguments to the contrary, a permit to construct the line may be recommended.

(b) A duplicate application must be forwarded to the Department of Highways for their approval. No permit is granted until the Department of Mineral Resources has received a notice from the Department of Highways that it has no objection to the pipeline plan.

(c) It is necessary for the applicant to have the prior approval of the various municipalities through which the line will pass.

(d) There are also certain requirements regarding data to appear on the plans before issuance of a permit.

Once a construction permit has been granted, the applicant may proceed with the actual construction of the line.

Having completed the construction of the line, the operator may obtain an interim operating permit subject to his complying, within a reasonable period, with the regulatory submission of factual data and plans covering the line which is required prior to the issuance of a full operating permit.

Before obtaining the final operating permit, the operator must first prepare linen plans of survey of the line, which plan must be approved by the Department of Highways, the Department of Mineral Resources and the Land Titles Office. Once approved, duplicate white prints of the approved plans must be forwarded to the Department of Mineral Resources with an application for an operating permit.

All plans in connection with permits are registered in the department.

All pipelines are subject to pressure tests and notice of tests must be submitted in order that the department may have an inspector on hand for such tests.

The remaining regulations under The Pipelines Act deal with periodic inspections, submission of operating statements showing the volumes of oil or gas purchased, transported, or sold each month, maintenance of the pipeline right-of-way, and similar items designed to safeguard the general public.

[illegible]

As has already been indicated in Part I of this submission, The Local Government Board may, under the authority of the Public Utilities Companies Act, declare a provincial pipe line company to be a common carrier. Pipe lines so declared to be common carriers are subject to tariff regulation by the same Board.

THE CHAIRMAN: I take it from what was said this morning that has never been done in the Province?

MR. BROCKELBANK: No. We have not declared any pipeline a common carrier. We have not put into effect any tariff regulations. I will, in the next Section, have something to say about that particular situation.

THE CHAIRMAN: Fine. Thank you.

MR. BROCKELBANK: I might add though, these are the kind of powers that I think everyone recognizes the Government must have and they hope the Government never has to use them.

THE CHAIRMAN: I understand.

MR. BROCKELBANK: 3. Pipeline Jurisdiction: Legislative control of the construction and operation of pipeline systems, over which the province has jurisdiction, is exercised in Saskatchewan through the Pipe Lines Act, the Public Utilities Companies Act, and the regulations made under these acts, as has already been indicated. This provincial legislative control extends to pipelines and pipeline systems wholly within provincial boundaries.

On the other hand, pipelines which cross provincial or international boundaries fall within the jurisdiction of the Parliament of Canada, exercised through the Pipe Lines Act and other federal

legislation. The Board of Transport Commissioners is, by this legislation, given certain powers and authority over pipelines within the federal jurisdiction. In addition to regulations governing various aspects of the construction of such pipelines, the Pipe Lines Act gives the Board of Transport Commissioners the power to declare oil pipelines common carriers, to order the provision of adequate facilities for receiving, transporting, delivering and storing of oil, and to regulate traffic and fix tolls and tariffs.

In a recent decision, the Board of Transport Commissioners, in the exercise of these powers, refused an application of Westspur Pipelines Ltd. to transfer those portions of its system classed as gathering lines, to Producer's Pipelines Ltd., a company incorporated to construct and operate gathering lines feeding into the main interprovincial trunk line. Inherent in this decision is the inference that the Board of Transport Commissioners intends to exert jurisdiction over all feeder lines to any interprovincial pipeline.

Another example of this purported extension of federal jurisdiction occurred in connection with the pipeline delivering crude from the Weyburn field. Westspur Pipelines first constructed an interprovincial line from the Midale field through Steelman and Alida to Cromer, Manitoba, for the purpose of delivering crude to the Interprovincial Pipeline. When it became necessary to provide a pipeline outlet eastward from the Weyburn field to link up with this facility, the Saskatchewan Oil and Gas Conservation Board received

[illegible]

an application from Trans Prairie Pipelines Ltd.--I might state that that is not technically correct, the Department or Minister received it,-- for a permit to construct such a trunk line wholly within the province. This permit was approved and the line is now in operation. However, Westspur Pipelines also applied for a permit to build the line, but since they are a Special Act company under federal jurisdiction, their application had to be made to the Board of Transport Commissioners. Thus the anomalous situation arose where two separate Boards heard separate applications for ostensibly the same permit.

It is submitted that the exercise of the extensive federal powers should be limited strictly to pipelines which are interprovincial or international in character. Theoretically, it may be argued that federal jurisdiction with respect to say, permission to construct a pipeline, extends back from a main trunk line crossing a provincial boundary, to a trunk line constructed wholly within a province which happens to connect with the main interprovincial line. But, if an attempt were made to assert federal jurisdiction over such provincial trunk lines, there is nothing to stop the further extension of federal jurisdiction back over the gathering lines connecting the provincial trunk line to the lease battery and eventually to the very wellhead itself, on the pretext that all the pipeline connections were part and parcel of "an interprovincial pipeline" and therefore subject to federal control. Indeed, if federal jurisdiction in this matter were to be determined by the mere connection

of pipes, it would follow that federal jurisdiction should extend not merely to the wellhead but back through the connecting pipes and down to the very oil reservoir itself. Such a result is patently absurd and would make a mockery of provincial jurisdiction over natural resources.

Under Saskatchewan's Oil and Gas Conservation Act, for instance, rules are promulgated which, among other things, govern daily well allowables and provide gas and water penalties. To enforce these rules and carry out other duties under the Act, the staff of the Department of Mineral Resources are authorized and required to enter upon the operator's premises and to check daily gas, oil and water production of individual wells and batteries of wells. To carry out these checks, tanks must be gauged, meters must be calibrated and, upon occasion, valves must be sealed open or shut, as the case may be, for the duration of a particular test. If federal jurisdiction over interprovincial and international pipelines were considered as extending back through connecting provincial trunk lines and gathering systems to the well head, the provincial staff would clearly lose its authority to carry out this regulatory work.

Although there may be a physical connection between an interprovincial pipeline subject to federal jurisdiction and another pipeline located wholly within a province, and although oil may, from time to time, enter the interprovincial line from the provincial line or vice versa, there is no reason why such connections and movements of oil should operate to extend federal jurisdiction to the provincial lines. Similarly, although physical connections may be provided between railways subject to federal jurisdiction, and provincial railways, these connections in no way operate to extend federal authority to the provincial systems. Indeed the very connections at the points where the oil pipelines meet are constructed in every case, so as to provide a means of shutting off, either temporarily or permanently, the flow of oil from one pipeline to the other -- in other words, a means of severing the purely provincial movement of oil from the interprovincial or international movement. Different companies own the lines, different rates are charged, different and severable movements of oil are contemplated. There can be no justification for any attempt to extend federal jurisdiction to these provincial pipelines.

It is most important that the limits of federal jurisdiction over pipelines be observed in the application of the Pipe Lines Act. The authority of the Board of Transport Commissioners must be clearly limited to those pipelines which are, within the meaning of Clause 10 of Section 92 of the British North America Act, works or undertakings "connecting the Province with any other or

others of the Provinces, or extending beyond the limits of the Province". If this is not done there will be serious interference with the rights of the Provinces to control their natural resources.

Now, Mr. Chairman, probably because of my experience with this particular problem, probably of my rural upbringing on the farm, I thought I wanted to say a few more remarks on this particular question, and I have a supplementary paper here which is not very long. I am getting 50 copies so there will be lots for everyone concerned, but at the present time I have these typewritten copies.

THE CHAIRMAN: Do you wish this to be added as an addendum to this, or do you wish it as a separate exhibit?

MR. BROCKELBANK: I think, perhaps, it should be a separate exhibit.

---EXHIBIT NO. R-14-3: Supplementary comments on brief to Royal Commission on Energy.

MR. BROCKELBANK: Before I start to read this short brief I would like to say in dealing with this problem it sometimes was rather frustrating, but we did enjoy very fine co-operation from pipeline companies and the oil industry generally, and I want to make that statement because I do not want any of my remarks to reflect on that good co-operation that we had.

With your permission I would like to add a few supplementary remarks at this point on this question of pipeline jurisdiction. I would not suggest that this is the most important question

your Commission will have to consider, but I believe it is very important and one which could lead to a good deal of trouble, which in my opinion is quite unnecessary.

Let me first say that no blame should rest on the Board of Transport Commissioners for the situation which has arisen. They are bound to be guided in their actions by the Pipe Lines Act of Canada. Consequently on one occasion the Board was compelled to state that an Inter-provincial Pipe Line Company could not sell its gathering and feeder lines to a Provincial Pipe Line Company because that Provincial Pipe Line Company would have no authority to operate those lines. However, at that time and at the present time a number of Provincial Pipe Line Companies own and operate gathering, feeder and delivery pipe lines, which are connected to the Inter-provincial Pipe Line exactly in the same way as in the former case I referred to.

If in the one case it is possible for the Board of Transport Commissioners to prevent a Provincial Company from taking over and operating feeder and gathering lines it stands to reason that on application of any interested party, concerning one of the Provincial pipe lines now in operation that the Board of Transport Commissioners might have no choice but to give a similar decision: that is, to declare it unable to operate unless it became an interprovincial company. Step by step the rightful jurisdiction of the Province could be completely nullified with grievous harm to the Province. It has already been pointed out that the

legal but illogical extension of Federal jurisdiction could completely frustrate the Provin e in its efforts to manage and control its resources.

The next Section in our brief is No. 4 - Control of Pipe Line Tariffs, but before I read it I would like to follow up a little further possible bad results from this tangled skein of jurisdiction over pipelines.

Let us suppose that a large producer of oil, or in fact a number of producers in an oilfield own and operate a pipeline under a Provincial Pipe Lines Act, transporting their oil to an interprovincial pipeline on its way to market. To my knowledge no company or companies in Saskatchewan have taken advantage of such a situation, but if they were so inclined they could in fact charge themselves a very high rate for transporting the oil and thus reduce the field price and so pay less royalty to the Provincial Government. A company might even have such an incentive from an advantage to be gained in regard to income tax. Such action might also severely injure mall producers who had no other choice but to use that pipeline.

If the Province took action to make such a pipeline a common carrier and to examine the tariffs of the company a special Act or Interprovincial Pipe Line Company might be organized. It might make application to the Board of Transport Commissioners for permission to purchase the Provincial line in question. The Board of Transport Commissioners would have a difficult situation before it and in the light of previous decisions could

hardly dismiss the application.

In Alberta the Trunk Line Gas Gathering System was set up under a separate provincial company with the obvious objective of preserving provincial jurisdiction over their resources. Who can say that even this device will safeguard provincial rights in the face of present federal law.

In my opinion there is no need for this situation to exist. Representatives of this Province will be very happy to discuss with representatives of the Federal Government a solution to this serious problem. At the present time this great net of jurisdiction set up under the Pipe Lines Act of Canada casts a dark shadow on Provincial rights and Provincial authority to manage and control these resources.

Attached to these remarks is a copy of a letter I wrote to the Honourable George Hees, Minister of Transport on January 6th, 1958 on this subject. The letter adds some details which I hope will be of value to you.

MINISTER OF MINERAL RESOURCES

REGINA, Saskatchewan,
January 6, 1958.

Honourable George Hees,
Minister of Transport,
OTTAWA, Ontario.

Dear Mr. Hees:

I would like to call to your attention some of the problems arising concerning The Pipe Lines Act (Canada) and The Pipe Lines Act (Saskatchewan). Difficulty arises in deter-

mining jurisdiction over pipelines to give Canada the authority and responsibility to control interprovincial trade and traffic, and at the same time to leave undisturbed, the right and responsibility of the Province to regulate and control the development and use of its natural resources. Perhaps the difficulty can best be illustrated by a recital of some of the events that have taken place, the circumstances which presently exist and the probability of further confusion and trouble.

In 1955 Westspur Pipe Line Company and others made application to The Board of Transport Commissioners for permission to construct a pipeline from Cromer, Manitoba, which is a pumping station on the Interprovincial Pipe Line Company line, to a point in Saskatchewan near Midale. After a hearing by the Board, permission was granted. I can have no quarrel with this as I recognize Canada's responsibility to control and regulate interprovincial trade and transportation.

Subsequently in 1956 the Trans Prairie Pipe Line Company (which is not a special act company as defined in The Pipe Lines Act (Canada) made application to me to construct a pipeline from Midale to the Weyburn oilfield. Obviously this pipeline was for the purpose of transporting oil from the Weyburn field to Midale and there putting it into the Westspur line. We granted this permission, but before permission was granted Westspur made

application for the same privilege to The Board of Transport Commissioners. Westspur being a Special Act company, had no choice under the terms of The Pipe Lines Act (Canada) but to make its application to the Board of Transport Commissioners even though the pipeline in question was entirely within the province of Saskatchewan.

The Board of Transport Commissioners dismissed the application of Westspur because a pipeline was being constructed on the location by Trans-Prairie Pipe Line Company and it was not considered to be in the public interest to duplicate the service. The Board, however, maintained that they had full authority to give the permission or to dismiss the application.

In 1957 a new company known as Producers Pipe Lines Company (not a Special Act Company) was organized. This company is owned by the same people who own Westspur but is not a subsidiary of Westspur.

Producers Pipe Lines Company made application to me for permission to construct some transmission lines and gathering systems all wholly within Saskatchewan, but connecting to the Westspur line. This permission was granted on March 18, 1957.

The owners of Westspur and Producers desired to have the Producers Pipe Lines Company own and operate all the collecting systems and branch lines which they own in both companies and which lie wholly within the

Province of Saskatchewan. Therefore Westspur Pipe Lines Company made application to The Board of Transport Commissioners for permission to transfer such assets to Producers. The Board heard the application on November 5, 1957 and on D cember 5 issued a judgment dismissing the application. In its judgment dated D cember 5, 1957, the Board stated as follows: "The Board has concluded that the language of Section 10A plainly and unequivocally prohibits Producers from operating the lines in question since it is a Provincial company and not a Special Act company and since the Board has already found that the lines would, after the sale, continue to be part of an extra-provincial pipeline."

However, at this time we have a number of other pipelines wholly within Saskatchewan which have been constructed on the authority of permission from the Province and these lines are connected to interprovincial lines and are being operated by companies which do not have permission from The Board of Transport Commissioners. I would therefore say there is considerable confusion and uncertainty in the question of jurisdiction over pipelines.

I do not think it is necessary or desirable to allow this situation to continue. Surely it is possible to amend the Pipe Lines Acts of the respective jurisdictions to eliminate at least most of the confusion and uncertainty.

I would suggest that the definition of "pipeline" and "extra-provincial pipeline" in the Pipe Lines Act (Canada) be amended so as to include in the Federal jurisdiction only the inter-provincial trunk lines and the necessary appurtenances thereto and to exclude branch lines, feeder lines, gathering lines and delivery and distribution lines and the necessary appurtenances thereto, wholly within the Province. Such a division would still leave a boundary line between the two jurisdictions where there could be occasional problems but would eliminate the broad field of overlapping authority where most problems now occur. The Pipe Lines Act (Saskatchewan) could be amended then to exclude pipelines which are included under your Act.

Such an arrangement would leave the Federal authorities in control of interprovincial trade and traffic and leave the Province undisputed rights to control and regulate the development and use of our oil and gas resources.

I would be very happy to have representatives from your department and my department meet to discuss this question and to endeavour to find a solution.

Yours sincerely,

J.H. Brockelbank,
Minister of Mineral Resources.

Needless to add, Mr. Chairman, I do feel deeply on this and feel that the matter does need attention.

THE CHAIRMAN: Well, Mr. Minister, you obviously have gone into this and have given it great consideration. Suppose an interprovincial pipeline company or a Special Act Company, as you suggest, were to incorporate a subsidiary in the Province of Saskatchewan, let us say, to do its gathering and the provincial gathering of gas or oil, whatever it may be; how would you regard that from a constitutional point of view? Would that Provincial company be outside the jurisdiction of the Board of Transport Commissioners or the Federal Government?

MR. BROCKELBANK: I do not think that the Government of Canada will allow a Provincial company to operate that is not under their control. I am not a lawyer but I think that is the case.

THE CHAIRMAN: What I am trying to get at, how do you find the constitutional basis? Is it on the physical assets; is it because of the existence of the physical assets going across two boundaries, or is it the corporate body that brings it within that Federal control?

MR. BROCKELBANK: I think the law in this regard, -- it follows we must have a pipeline going across boundaries and we recognize that Canada has responsibility in regard to the interprovincial trade and traffic and we recognize and do not argue about it insofar as it is necessary, but no further. Canada should have jurisdiction so as to be able to carry out its responsibilities, but the definition in the Pipe Lines Act of Canada takes in everything and a Special Act Company, as has already been mentioned, cannot apply to the Province

for a permit. They are not allowed to do so. It is not a question of this corporation or that corporation or the physical pipelines, but it is purely a question of making sure that we have the right to maintain with security our proper authority and jurisdiction.

THE CHAIRMAN: Would it be a fair statement to say that following the reasoning of this case which you draw to our attention, -- you are speaking here of feeder lines into an interprovincial pipeline; correct?

MR. BROCKELBANK: Feeder lines, and also I mentioned delivery lines like Saskatoon Pipeline and this line at Moose Jaw that go out of the interprovincial to refineries.

THE CHAIRMAN: Or to distributors, if you take gas?

MR. BROCKELBANK: If it were a products line, yes.

THE CHAIRMAN: Where does the Federal jurisdiction stop? Let us take a concrete case: take Trans-Canada gas pipelines going across the country and we get to the point, let us call it Kapuskasing, or any place you like, and there is another, a distributor line for Trans-Canada and it takes the gas at that point from Trans-Canada. Would it not, following the logic of this decision of which you speak, mean that the Federal jurisdiction as it extends over Trans-Canada, must necessarily extend over that?

MR. BROCKELBANK: Right to the burner.

THE CHAIRMAN: Right to the burner.

MR. BROCKELBANK: I think anybody could well argue that. It is a ridiculous end to the argument, I will admit, but I believe that once in the Trans-Canada pipelines, once the Canadian authorities approve the take-off at Kapuskasing, it then becomes or should become the responsibility and privilege of the Province of Ontario to regulate how that gas is going to be handled from there on for the people of Ontario.

THE CHAIRMAN: Handled and priced?

MR. BROCKELBANK: And price, and whether or not the Town of Kapuskasing is going to put in a distribution, whether the Province of Ontario is going to put in a distribution or whether a private company is going to put in a distribution. All those are things which should be within the right of the province.

THE CHAIRMAN: But the difference seems to me, possibly, that Westspur, in this case, is a Special Act company.

MR. BROCKELBANK: Yes.

THE CHAIRMAN: It is an interprovincial company.

MR. BROCKELBANK: That is correct.

THE CHAIRMAN: Naturally, then, the Federal jurisdiction asserts itself over it.

MR. BROCKELBANK: That is right.

THE CHAIRMAN: Because of its corporate character.

MR. BROCKELBANK: Well, the corporate character of the company is a result of the law which exists; the law requires it.

THE CHAIRMAN: I do not know how you would differentiate. That is the problem. How would you differentiate between the assets used by the company in its interprovincial character and the assets used in its purely provincial character?

MR. BROCKELBANK: Well, how do they manage here at Regina? The Interprovincial Oil Pipeline goes through Regina and, joining on here, is the South Saskatchewan Oil Pipeline, which is built under the provincial permit and jurisdiction and

there is apparently no problem.

THE CHAIRMAN: Yes, but those assets are no part of Interprovincial Pipeline.

MR. BROCKELBANK: That is right. What Westspur wanted to do was to sell to Producers, and I pointed out, sir, that Westspur and Producers are, I said, two companies owned by the same people. Now, on the correction, Producers owns the stock of Westspur, but Westspur wish to sell to Producers the gathering lines and feeder lines and have this provincial company which obviously has to do with that part of the lines concerning the well production and field production, all of this operation, under the provincial company; and, as I said before, I do not blame the Board of Transport Commissioners - they had to follow the law but, in my opinion, because of the law, they had to arrive at a rather impractical and not too logical a decision.

THE CHAIRMAN: You would say the law was "a hass"?

MR. BROCKELBANK: Quite so. In that case, yes.

MR. COMMISSIONER HOWLAND: Mr. Brockelbank, not thinking in terms of constitutional rights at the moment: is it possible that if you had no control of the price structure in the Provincial trunk line, that you might defeat the purpose of any Federal regulation on the Interprovincial Pipeline?

MR. BROCKELBANK: If we had no control in regard to the tariff structure in the provincial lines?

MR. COMMISSIONER HOWLAND: If the Federal Government implemented a policy of controlling the

tariff of Interprovincial oil or Interprovincial gas pipelines and had no say regarding the tariffs elsewhere - and I am not suggesting they should have those - is it possible that might defeat the purposes of any Federal control?

MR. BROCKELBANK: It would take a long stretch of my imagination to think that it could. One of our complaints now is that this insecure position in regard to jurisdiction puts us in a position where it would be very difficult, even if we thought it necessary, to do anything about the tariffs, because we know what pipelines have been built under provincial permit but we certainly do not know what ones are going to be there in the future.

MR. COMMISSIONER HOWLAND: I was thinking in terms of possible evasion of the effect of regulation by a corporate structure organization on either a gathering line or provincial trunk line, if you like, but not necessarily provincially owned, or even a subsidiary company distributing between the end of a transmitting line and some consumers.

MR. BROCKELBANK: I would think your fears are not well founded, because every province wants to see as large a part of the price of the product as possible go back to the producer, because that is where we collect our revenue, our royalty and taxes.

MR. COMMISSIONER HOWLAND: That is so.

MR. BROCKELBANK: And I believe that is right in other ways, too. The people who go out and drill and sometimes drill a lot of dry holes and

spend a lot of money and finally get somewhere, they are the people who take a risk. The people who put in pipelines may take some risk, but it is infinitesimal compared to the risk taken by explorers who went out looking for oil.

MR. COMMISSIONER LADNER: Mr. Chairman, may I ask a question?

Mr. Minister, do I understand your idea is that the interprovincial lines or international lines should be a conduit for the oil or gas to where it is going and that would be under the Federal Government, but what I would call the ancillary lines for gathering, flow service and so on, would not be under the Federal Government but under the provincial jurisdiction?

MR. BROCKELBANK: That is correct.

MR. COMMISSIONER LADNER: Does that brief statement simplify it?

MR. BROCKELBANK: That is correct.

THE CHAIRMAN: I just want to follow that up, if I may. Do you mean by that that you would say that an interprovincial pipeline that had a gathering system of some kind within the province would then be under both jurisdictions?

MR. BROCKELBANK: No.

THE CHAIRMAN: And that the province would assert the jurisdiction over the gathering line and the Dominion would assert the other jurisdiction, because there you would get a divided jurisdiction, if I understood your answer to Mr. Ladner's question.

MR. BROCKELBANK: If one company was going to own both, that would be true. Now, at the present

time it is not possible for that to happen, because only a Special Act company can own an interprovincial line and a Special Act company cannot own any line that does not come under the Federal authority. Any one that is attached on to it becomes under the Federal authority.

THE CHAIRMAN: Westspur?

MR. BROCKELBANK: That is right. The opposite is also true. A provincial company cannot own an interprovincial line, so there is no case at the present time where one company is in that position.

THE CHAIRMAN: But, Mr. Minister, may I just --

MR. BROCKELBANK: The position exists where it could be that way.

THE CHAIRMAN: That is what I mean.

MR. BROCKELBANK: We should have jurisdiction over that gathering system and we have not.

THE CHAIRMAN: Then, sir, may I suggest that the position which you are taking is that there should be a dual jurisdiction, the Federal having jurisdiction over part and the province having jurisdiction also over part. That is really the position you are taking, is it not?

MR. BROCKELBANK: Well, that is all right. There could be two divisions of a company to operate the separate parts or one division with separate accounting and records.

THE CHAIRMAN: I think logic would bring you to that conclusion, that in an interprovincial pipeline the Federal Government would have jurisdiction of the interprovincial part; but you are saying that the

province should have jurisdiction over whatever physical assets may be in the province.

MR. BROCKELBANK: Why, I would not mind if the Federal Pipe Line Act was amended to say that any Special Act company could not own any gathering system.

THE CHAIRMAN: Then you would declare it to be a common carrier immediately, would you?

MR. BROCKELBANK: They must act as common carriers.

THE CHAIRMAN: They would not be conveyors of their own property.

MR. BROCKELBANK: That is right. You see, you have an oil field and probably twelve companies producing in that field. Five of them may go together and build a pipeline, but that field must all be produced together and you can allow no discrimination; you cannot say to this fellow who is not big enough to own a pipeline, "They won't take your oil, so you can't produce," and the other fellow steals it from under him.

The whole purpose in the Conservation Act is to prevent that sort of stuff from happening. Any purchaser, they must buy ratably, and they do, and we do not have complaints. If we do have complaints, then we would have to take action; but I am very happy to say we do not have complaints.

THE CHAIRMAN: How do you apply that principle to gas?

MR. BROCKELBANK: Well, if you are taking gas, they have to be ratably produced for the same reason or reasons. There are at least two: one is

the protection of ownership rights and the other is for the good of the reservoir and conservation.

THE CHAIRMAN: I will not quarrel with you on that, but, as I understand it, in gas it is the pipeline's own gas that they transport.

MR. BROCKELBANK: Oh, there are limits to that. Suppose the pipeline company owns the gas on this section of land.

THE CHAIRMAN: That is what I mean.

MR. BROCKELBANK: And you own it on the next section, and the gas pool is connected underneath. We will not allow them to produce their gas or to put their gas into a pipeline and refuse to take yours. Of course, if you had not drilled a well, you could not complain; but once you have a well and are ready to sell it, you must have a rateable chance to sell your gas, otherwise they are going to steal your gas.

THE CHAIRMAN: You mean in the same field?

MR. BROCKELBANK: In the same field.

THE CHAIRMAN: Well, I presume that is what is done also in Alberta.

MR. BROCKELBANK: It is common practice all over the continent.

THE CHAIRMAN: But it is gas purchased by the pipeline and put through its own facilities. In the case of the oil, the pipeline is quite different. It is not the pipeline's oil which comes through the pipeline. They are, in essence, common carriers, although they have not been declared as yet to be such, although I suppose if they were, they would have to take oil from everybody enroute.

MR. BROCKELBANK: I would not say that. This argument applies to gas. We will go back through the Alberta Trunk System to a field where the gas is physically bought, whether it is legally bought or not there, and there you will find it must be ratably taken from the different wells and owners in that field. After it is bought and in the trunk line, it then has no effect on conservation and it would be up to a province whether or not the province wanted to have rateable taking of the gas from different pools and fields that were completely separate.

That is another problem that does not affect this in particular.

THE CHAIRMAN: I do not know how you separate the jurisdiction there, in a circumstance such as Westspur, and certainly not under the present legislation.

MR. BROCKELBANK: Well, the solution was suggested when the application was made to the Board of Transport Commissioners, just that Westspur be allowed to transfer or sell to Producers these gathering facilities. Now, the situation is that Westspur owns the trunk line and some gathering facilities; Producers own other gathering facilities and smaller feeder lines - well, they are not so very small, either; they are 10 or 12 or 16 inch.

If we had made an effort, we could not have got it mixed up much better.

THE CHAIRMAN: It is like a bushel basket of rattlesnakes.

MR. BROCKELBANK: Shall I go on, sir?

THE CHAIRMAN: I think Mr. Ladner has a

question.

MR. COMMISSIONER LADNER: I have a question which is not quite clear to me. On page 42 reference is made to mileage, at the bottom of page 41 and 42.

MR. BROCKELBANK: Yes.

MR. COMMISSIONER LADNER: I made notes on it. The trunk pipeline, apart from the Interprovincial, is 400 miles and the gathering systems are 450. Then there is a reference made at page 41 to the Interprovincial Pipeline, that is the company, of 400 miles.

MR. BROCKELBANK: Yes.

MR. COMMISSIONER LADNER: Those are all three separate items of mileages, are they not?

MR. BROCKELBANK: That is correct.

MR. COMMISSIONER LADNER: 1250 miles?

MR. BROCKELBANK: 1250 miles in the three of them.

MR. COMMISSIONER LADNER: Thank you. That is all.

MR. BROCKELBANK: Shall I carry on?

THE CHAIRMAN: Thank you, sir.

MR. BROCKELBANK: 4. Control of Pipeline Tariffs: No provincial regulatory authority can inquire directly into any apparent inequity created by the tariff schedule of an interprovincial pipeline company; such an examination is definitely the prerogative of a federal authority.

As has already been indicated, the federal Pipe Lines Act empowers the Board of Transport Commissioners to declare an oil pipeline company

under its jurisdiction to be a common carrier and to review and control tariffs charged by such common carriers. So far as is know, the Board has not yet declared any interprovincial pipeline company to be a common carrier, nor has it controlled or revised any pipeline tariff schedule.

Interprovincial pipelines are, as a rule, owned and operated by producing companies or groups of producing companies, some of which are vitally interested in the refining, at destination, of the crudes they transport. Thus, quite apart from the normal considerations which enter into the establishment of a pipeline tariff, those companies with a controlling interest in a pipeline have the opportunity to raise or lower tariffs to their own advantage, according to the throughput which may come from their own wells or be destined for their own refineries. It would therefore appear desirable to classify these pipelines as public utilities, to ensure equitable rates for all who use them, with rather definite restrictions on the profit allowed on investment.

Furthermore, it would appear to be in the interest of all concerned if interprovincial pipelines were declared to be or were automatically deemed to be common carriers. This would provide protection against discrimination in rates, in service and in facilities. It is desirable that interprovincial pipeline tariffs be subjected to close scrutiny and review, and, if necessary, revision, by an appropriate federal authority. Through such public investigation and regulation of tariffs

all parties concerned can have the opportunity to be heard and to understand the basis for tariff calculation. Through such means also, the public interest can be protected.

The framework for this kind of control of pipeline tariffs already exists in the Pipe Lines Act, as has been noted, but it has not been used. It is important, both to the industry and to the general public, that the powers provided by the federal parliament be exercised.

THE CHAIRMAN: Why do you suggest it is desirable to classify Interprovincial Pipelines as public utilities and also as common carriers? What advantage is to be gained? As I follow the reasoning, your desire is that their tariffs and rates should be subject to scrutiny, that they should be allowed to earn only a fair and reasonable return on a properly established rate base, which could occur if they were declared to be common carriers, as I understand it, or, if they were public utilities, I do not know where the Dominion has jurisdiction to declare that.

MR. BROCKELBANK: Well, I don't know. Those might be a few loose words there.

THE CHAIRMAN: If that is so, fine. I just did not know whether you were making a distinction.

MR. BROCKELBANK: I think probably they were just a bit of loose words there.

THE CHAIRMAN: All right.

MR. BROCKELBANK: B. MARKETING OF PETROLEUM AND PETROLEUM PRODUCTS: An effort has been made in

this section to study and analyse the present and future position of the marketing, processing and refining of the oil produced in Saskatchewan. In view of the rapidly increasing production of oil in the last decade, compared with the three or four decades before, the period from 1950 onward has been selected for present and historical analysis. Forecasts have been limited to the next eight years, from 1958 to 1965. To forecast the future trend of marketing of oil and refined products with reasonable accuracy is not simple, especially when it is affected by numerous factors, provincial, national and foreign in nature. The study should be regarded as showing trends, rather than absolute figures.

1. Disposition of Saskatchewan Crude Oil, 1950-1957.

As is indicated in Table XII below, there have been significant fluctuations in the marketing pattern of Saskatchewan crude oil since the great increase in production in 1953. Up to that time most Saskatchewan oil, which was produced chiefly in the Lloydminster area, went to refineries immediately across the border in Alberta. From 1954 to 1956 a major part of it was disposed of in Saskatchewan, but in the latter year U.S. refineries took slightly more Saskatchewan oil than did the refineries in the province. It will be noted that in the same year Ontario displaced Alberta as the third principal market, 4,099,173 barrels going to that province, as compared with less than 500,000 barrels the previous year.

In 1957 Ontario emerged as the largest purchaser at 14,260,208 barrels, the United States

next at 11,758,185 barrels and Saskatchewan consuming a reduced amount at 5,250,686 barrels.

THE CHAIRMAN: I just want to ask one question here: that increase must have been the increase in the amount of oil going to Ontario when the Interprovincial Pipeline came into operation and increased its facilities.

MR. BROCKELBANK: Yes, it must have been.

THE CHAIRMAN: I do not know what you mean by the same year. Does that mean 1953?

MR. BROCKELBANK: Mr. Chairman, it was Southeast Saskatchewan crude coming into the picture.

THE CHAIRMAN: Oh.

MR. BROCKELBANK: The medium sour crude from the --

THE CHAIRMAN: That is the light crude, is it?

MR. BROCKELBANK: Yes, in the southeast. The pipeline was there. This was - this marks the date of going into operation of that company, Westspur.

THE CHAIRMAN: Well, that increase to Ontario went through the facilities, then, of Interprovincial and it came in 1956 because of the much larger amount of light crude which was brought above the ground in that year, is that so?

MR. BROCKELBANK: That is correct.

THE CHAIRMAN: Thank you.

MR. BROCKELBANK: Then we have a table, Table XII.

[illegible]

TABLE XII

Comparative Statement of Crude Oil Disposition, 1950-1957
(in barrels)

	1950	1951	1952	1953	1954	1955	1956	1957
Producer's Disposition								
Production	1,039,523	1,247,395	1,696,946	2,791,472	5,422,899	11,317,618	21,077,371	36,801,071
Opening Inventory	10,607	8,660	12,533	14,724	103,091	3,008,715	4,023,024	4,543,534
Trans. and Adj.	182-	1,465-	184-	11,447+	9,168+	145,370+	52,625-	-
Closing Inventory	8,860	12,533	14,724	103,091	388,722	3,114,205	4,065,342	4,635,613
Sales to Purchasing Companies	1,041,083	1,242,257	1,694,571	2,714,552	5,146,436	11,357,048	20,982,428	36,625,106
Purchaser's Disposition								
Total Purchases	1,041,083	1,242,257	1,694,571	2,714,552	5,146,436	11,357,048	20,982,428	36,625,106
Opening Inventory	-	-	-	-	-	4,092,083	4,928,888	7,519,173
Trans. and Adj.	-	-	-	-	101,438	261,020-	195,446-	-
Closing Inventory	-	-	-	-	30,456	4,239,222	5,155,779	7,644,132
Sales to:								
Sask. Ref.	351,743	447,149	367,236	400,459	3,057,102	5,935,281	6,953,045	5,214,149
Sask. Misc.	-	7,589	41,899	622,541	104,732	139,748	104,886	36,557
Alberta Ref.	689,340	787,519	1,285,436	1,691,552	1,739,158	1,843,719	1,790,896	1,387,758
Manitoba Ref.	-	-	-	-	1,654	11,885	558,167	3,906,333
Ontario Ref.	-	-	-	-	111,896	547,297	4,099,173	14,260,308
U.S.A. Ref.	-	-	-	-	-	2,470,959	6,963,924	11,758,135
TOTAL SALES	1,041,083	1,242,257	1,694,571	2,714,552	5,014,542	10,948,889	20,560,091	36,563,170

Source: Department of Mineral Resources.

2. Present Markets by Types of Crude: The marketing of Saskatchewan crude oil depends to a considerable extent on the type of crude being produced. Production by type of crude is shown in Table XIII.

TABLE XIII

Crude Oil Production in Saskatchewan by Type of Crude

(figures in barrels)

Type of Oil	1956	1957
Light	7,318,178	20,500,000
Medium	10,071,111	13,100,000
Heavy	3,688,082	2,900,000
Total	21,077,371	36,500,000

Source: Department of Mineral Resources.

As of December 1957, the overall production of crude in Saskatchewan was averaging 122,700 barrels a day. Of this amount 16,000 barrels per day was being utilized by Saskatchewan refineries. The remainder was disposed of at the average rate of 5,000 barrels per day to Alberta, 6,000 to Manitoba, 55,000 to Ontario and 36,000 to the United States. The present market position for various types of crude is indicated below.

(a) Heavy Gravity: Because of the high cost of transporting heavy crude oils their market has been limited to Saskatchewan or to refineries in Alberta located near to Saskatchewan oil fields. Little of this crude finds its way into the Interprovincial Pipeline or to refineries south of the International boundary. Moreover the market for

this type of crude is declining in Saskatchewan as well, largely because of dieselization of railways, effecting heavy cuts in the demand for Bunker "C".

Falling demand for refined products normally produced from heavy crude has resulted in reduced provincial production of this type of oil in 1957. Actual production has already fallen to 73 per cent of productive capacity, where the average productive capacity is already actually less than the normal "economic allowance" per well due to close well spacing, drive mechanism and other factors.

(b) Medium Gravity: Medium gravity crude is produced chiefly in southwestern and southeastern Saskatchewan.

Most of the crude produced in the southwest is exported via pipeline to the northern United States, mainly to the Minneapolis area. This is virtually a captive market for the producers of this area. as they have a controlling interest in the connecting branch pipelines as well as in the Minneapolis refining facilities.

THE CHAIRMAN: Would you be good enough to explain that to the Commission.

MR. BROCKELBANK: The same Companies which produce the oil in the south-west, the South Saskatchewan Pipe Line, they own the Minnesota Pipe Line Company. Probably it is the one that goes off from the Inter-provincial.

THE CHAIRMAN: The Minnesota Pipe Line Company.

MR. BROCKELBANK: Yes, and they own the Great Northern Refinery at Minneapolis.

THE CHAIRMAN: That is the pipeline and that is the refinery.

MR. BROCKELBANK: They discovered the oil first.

THE CHAIRMAN: Who discovered the oil?

MR. BROCKELBANK: Mobile actually discovered the oil out here in the west.

THE CHAIRMAN: This is virtually a captive market for the producer of this area. The Commission would be interested in knowing who are the producers to whom you refer.

MR. BROCKELBANK: Mobile and Woodley Canadian, Sinclair and Tidewater and a number of other companies in the south-west. There is Anglo-American and a number of other companies, but Mobile and Woodley

Canadian were among the first in there and after they discovered this crude oil and established reserves they did quite a bit of marketing by tank car and consequently got a very low price in the field. Then they looked for a way to use it so this refinery was built at what they considered to be a good market and then they put in the pipeline.

THE CHAIRMAN: Who are the principal producers in the area?

MR. BROCKELBANK: Mobile and Tidewater would be the two largest producers, and Woodley.

MR. WILLIAMS: The Mobile operations represent a partnership of Mobile, Woodley, and Sinclair but Mobile is operator in almost all cases.

THE CHAIRMAN: Let me see if I can state this fairly without any reflection, as a matter of factual statement. These companies produce the oil in south-western Saskatchewan. They own the facilities by which the oil is transported to the border. Is that correct?

MR. BROCKELBANK: Yes. It is transported to Regina.

THE CHAIRMAN: I thought this went to Minneapolis.

MR. BROCKELBANK: Yes, but then it goes into Interprovincial down to Clearbrooke, Minnesota, then into their own pipeline to the refinery.

THE CHAIRMAN: There is no jurisdiction however imposed by the Province of Saskatchewan over the tariff or rates charged for the transport of that oil from the south-west in part of the province to the Interprovincial Pipe Line near Regina.

MR. BROCKELBANK: I would not say that. We have not had a hearing and we have not set rates and they have adjusted their rates two or three times downwards.

THE CHAIRMAN: There has been no exercise of the jurisdiction given under the Provincial Legislation to approve or fix the tariff for the transportation of that oil.

MR. BROCKELBANK: The answer to that question is no, there is none.

THE CHAIRMAN: So you run into the situation your brief cautions about owning either the producing wells or product and also the end use of it in the refinery because in this case they pay a transportation fee by Interprovincial Pipe Line that would be a known transportation cost according to Interprovincial tariff but it goes into their own refinery in Minneapolis. Is that correct?

MR. BROCKELBANK: Yes.

MR. JOHN BLACK: I am Mr. John Black, South Saskatchewan Pipe Line. May I be of some assistance here? I would like to state that Mobile Oil is not the owner of any part of Minnesota Pipe Line or of the refinery at St. Paul. Mobile is 50% owner of South Saskatchewan Pipe Line and the producing facilities only.

THE CHAIRMAN: Neither directly or indirectly?

MR. BLACK: In Minnesota Pipe Line, a refinery, that is correct.

THE CHAIRMAN: What about the other companies, is there somebody here?

MR. TYRON: Tidewater owns no part of any of these pipeline facilities nor the refineries you have been talking about either directly or indirectly.

MR. HARRY PAGE: The Tidewater group supplies about one-third of the Minnesota and they have no interest in either the pipeline facilities, either the Provincial Pipe Lines or the refinery, either directly or indirectly.

THE CHAIRMAN: Mr. Minister, this refinery is a foundling. Is there anyone who can tell us who does own it?

MR. BLACK: Woodley Canadian or Woodley Petroleum and Sinclair, as I understand it, own approximately 80 per cent of Minnesota Pipe Line and Great Northern Refinery and the other is owned by some few individuals, the remaining 20 per cent. I might add Mr. Sandlin will be here to present a brief on Woodley Canadian tomorrow and he can give you the exact figures on it.

MR. BROCKELBANK: Some of the southwestern production is also marketed in the Moose Jaw and Regina areas.

The operators in the Weyburn and Midale fields with medium gravity production are currently producing less than 30% of total well adjusted Maximum Permissive Rates due to present lack of markets.

Despite the relatively high rates of production in southwestern Saskatchewan the current ratio of production to productive capacity of medium gravity crudes is only 55% (38,500 barrels per day compared with 70,000 barrels per day).

MR. [illegible]: [illegible] Brewster owns no [illegible]
[illegible] these pipeline facilities nor the refineries
[illegible] been [illegible] either [illegible], or in-
[illegible].

MR. [illegible]: The Brewster group [illegible] combined [illegible] the [illegible] interest in the [illegible] facilities, [illegible] the refiners, [illegible] [illegible].

THE CHAIRMAN: Mr. Brewster, [illegible] is a [illegible] [illegible] [illegible]?

MR. [illegible]: [illegible] Canadian [illegible] out [illegible] as I understand [illegible] about [illegible] of Minnesota [illegible] treat [illegible] few individuals. The remaining [illegible] cent. [illegible] [illegible] decision [illegible] in it.

MR. BURKE: [illegible] group [illegible] is also serve [illegible] few [illegible] refining areas.

The provisions [illegible] with [illegible] at least [illegible] total well [illegible] Permian [illegible] basin [illegible] lack of markets.

Despite the relatively large reserves [illegible] crude in southwestern Saskatchewan the current [illegible] production [illegible] capacity [illegible] is only [illegible] 30,000 barrels per day, compared with 70,000 barrels per day.

(c) Light Gravity

Proximity to the eastern markets and good pipeline connections have helped the marketing of Saskatchewan light crude. This type of crude is at present being delivered to Winnipeg, Sarnia and Toronto. The result of ready markets for light crude is that production and marketing are virtually keeping pace with productive capacity. In 1957 these were respectively 72,000 and 75,000 barrels per day.

Although the production of light gravity crude in the province has been increasing rapidly in the past few years, it was not until 1957 that total production exceeded the provincial demand in substantial quantity. Indeed, with the provision of adequate pipeline facilities to serve southeastern fields, much of the oil from this area which formerly was shipped to Saskatchewan refineries by rail is now moving downstream towards eastern markets. This has resulted in reduced purchases in Saskatchewan of Saskatchewan light crudes in 1957.

The only bottleneck experienced in the marketing of light crude to date is the relatively high sulphur content of the Saskatchewan crude, which requires mixing with sweeter crudes in the Interprovincial Pipe Line. However, because of the other advantages enjoyed by the Saskatchewan light crude mentioned above, the small difference in quality has proven to be a minor problem in marketing this crude.

3. Petroleum Refining in Saskatchewan

(a) Capacity and Location

Saskatchewan has experienced a rather remarkable expansion in refining capacity during the past

few years, largely attributable to the availability of oil and to the demands resulting from increased farm mechanization, improved highways and industrial expansion.

With throughput capacity of only 29,900 barrels per day in 1950, this has since more than doubled by the end of 1957, a rate of increase considerably greater than the Canadian average for the same period.

Saskatchewan now has nine refineries engaged in the refining of crude oil. These refineries are well distributed in the province and meet most of Saskatchewan's demand for refined products.

The total present capacity of these refineries is 71,100 barrels a day. The biggest is that of Imperial Oil in Regina, having a capacity of 22,000 barrels a day, followed by Consumer's Co-operative Refineries, also in Regina, with a capacity of 16,000 barrels a day and British American Oil Company in Moose Jaw, having a capacity of 15,000 barrels a day. The other refineries are comparatively small with capacities ranging from 6,500 barrels a day for Royalite Hi-Way in Saskatoon and 5,000 bbls. a day for Royalite Products at Coleville down to 1,000 barrels a day each for the Prince Albert Refinery in Prince Albert and Northern Petroleum Corporation in Kamsack. The following table shows the location and capacities of the existing refineries in the province, with dates of their coming into operation.

TABLE XIV

Saskatchewan Refinery Capacity

Year	British American Moose Jaw[1] Crude	Consumers Co-op Regina[2] Crude	Moose Jaw[3] Husky Oil & Refining Crude	Imperial Oil Ltd. Regina[4] Crude	Northern Petroleum Corporation Kamsack[5] Crude	Petroleum Fuels Ltd. Moose Jaw[6] Crude	P.A. Refining Prince Albert Crude	Royalite Hi-Way Ltd. Saskatoon[8] Crude	Royalite Products Ltd. Coleville[9] Crude	Total Crude	Fargo Treating Plant Lone Rock[10] Crude
1950	6,000	2,400	–	16,500	800	–	1,000	2,050	–	29,900	1,500
1951	6,000	6,500	–	16,500	800	–	1,000	3,000	–	34,150	3,000
1952	15,000	6,500	2,500	16,500	800	–	1,000	3,000	–	45,300	3,000
1953	15,000	6,500	2,500	16,500	800	1,000	1,000	4,500	5,000	52,800	3,000
1954	15,000	12,000	2,500	22,500	800	1,000	1,000	6,500	5,000	66,300	3,000
1955	15,000	13,000	3,000	22,500	800	1,000	1,000	6,500	5,000	67,800	3,000
1956	15,000	16,000	3,000	22,500	800	1,000	1,000	6,500	5,000	70,800	3,000
1957	15,000	16,000	3,000	22,500	1,000	1,100	1,000	6,500	5,000	71,100	–

1. On Stream, September 1, 1934.
2. On Stream, May 27, 1935.
3. On Stream, December, 1952; formerly Trans. Empire Oils.
4. On Stream, September 9, 1916.
5. On Stream, 1936.
6. On Stream, November, 1953; skimming unit only, owned by National Light and Power.
7. On Stream, 1950.
8. On Stream, 1932, formerly Hi-Way Refineries.
9. On Stream, March, 1953.
10. On Stream, February 1, 1950; separating plant only.

Source: Department of Mineral Resources.

Are there any questions there at that point on the table?

THE CHAIRMAN: No, Mr. Minister. The Consumers Co-Operative Refineries, what is that? Is that a local?

MR. BROCKELBANK: It is a Co-Operative owned by the consumers and Saskatchewan farmers and urban people as well. There is something well over 100,000 members in the Co-Operative, who jointly own the Federated Co-Operative.

MR. COMMISIONER LADNER: The nine refineries, are they all privately owned other than Consumers?

MR. BROCKELBANK: It is privately owned too.

MR. COMMISSIONER LADNER: On the co-operative basis.

MR. BROCKELBANK: Yes.

MR. COMMISSIONER LADNER: Are the rest privately owned like Imperial and British American Oil and so on?

MR. BROCKELBANK: That is right.

(b) Receipt of Crude Oil by Saskatchewan Refineries

The intake of both Canadian and imported crude oil by Saskatchewan refineries is shown in Table XV. Saskatchewan is now producing more than twice as much crude oil as is being consumed in the province (36,500,000 bbls. as compared with 17,588,085 bbls. in 1957). It will be notedfrom Table XV, however, that most of the crude used in Saskatchewan refineries continues to come from Alberta, despite Saskatchewan's self-sufficiency in terms of oil production. This is due to the fact that most of Saskatchewan's production is located "down stream"

from its refining capacity. It is more economical to ship Saskatchewan crude to eastern markets and to use Alberta crude for Saskatchewan refining.

Before the advent in 1948 and 1949 of Alberta supplies of crude in quantity Saskatchewan depended largely on imports from the United States. This movement rapidly decreased, however, and ceased altogether in 1951.

For a short period in 1955 some Manitoba crude was used by Saskatchewan refineries but since then the situation has been reversed with Saskatchewan now supplying a portion of Manitoba's needs.

(c) Refined Products

The following are the principal products of Saskatchewan refineries: motor gasoline, diesel fuel, heavy industrial fuel, asphalt, kerosene, light fuel and furnace oil, still gas, coke, aviation turbo fuel, liquified petroleum gas, aviation gas and tractor fuel. The British American refinery in Moose Jaw, Imperial and Co-op in Regina, and Royalite Hi-Way in Saskatoon concentrate mostly on motor gasoline, diesel fuel and asphalt. The Husky Oil refinery in Moose Jaw, the Prince Albert refinery in Prince Albert and the Royalite refinery in Coleville are producing principally domestic and bunker fuel oils and asphalts. Northern Petroleum is producing farm fuel as their major product and Petroleum Fuels in Moose Jaw Bunker "C".

While the actual production and consumption of most refined products has been increasing during the last few years, the use of tractor fuel as such is decreasing. This can be

attributed to the fact that tractors used on Saskatchewan farms have been getting bigger in size and switching to other kinds of fuels. Because of this decrease in the use of tractor fuel, the Dominion Bureau of Statistics has combined tractor fuel statistics with the production and consumption of kerosene and stove oils in 1957. Another significant development in refinery operation in Saskatchewan in 1957 was the production of aviation gasoline for the first time. Its production has been rapidly increasing. On the other hand, because of the dieselization of railway engines, the demand for bunker fuel has been declining. This change in demand for bunker fuel has necessitated some of the refineries installing catalytic plants for production of gasoline from heavy grade oil.

The details of production and consumption of refined products in Saskatchewan are set forth in Tables XVI and XVII.

Saskatchewan Refineries Crude Oil Receipts and Refined Petroleum Production, 1950-1957

(Figures in Barrels of 35 Imperial Gallons)

	1950	1951	1952	1953	1954	1955	1956	1957
A. Crude Oil Receipts								
Domestic Crude Received								
Saskatchewan	351,743	447,149	367,236	400,459	3,187,214	5,449,317	5,503,026	5,249,039
Alberta	9,373,204	11,024,315	11,888,495	15,275,480	13,776,817	12,675,013	13,677,686	14,105,533
Manitoba	-	-	10,021	-	-	548,149	-	
Total Domestic	9,724,947	11,471,464	12,265,752	15,675,939	16,964,031	18,672,479	19,180,712	19,354,572
Imports from U.S.A.	47,085	-	-	-	-	-	-	-
Total Receipts	6,772,032	11,471,464	12,265,752	15,675,939	16,964,031	18,672,479	19,180,712	19,354,572
Opening Inventory	430,427	338,675	344,016	318,199	350,591	404,992	672,434	376,387
Closing Inventory	- 338,675	-344,016	-318,199	-350,591	-262,692	-700,108	-541,972	-509,561
Total Crude Oil Consumed	9,863,784	11,466,123	12,291,569	15,643,547	17,051,930	18,377,363	19,311,174	19,221,398
B. Refinery Losses & Adjustments								
Refinery Products Consumed	4,620	3,339	4,318	6,518	5,172	7,195		
Refinery Fuel Consumption	-706,630	-811,461	- 885,364	- 1,041,623	- 1,172,015	- 1,153,664		
Refinery Losses & Adjustments	-260,568	-198,586	- 152,358	- 135,902	- 317,352	- 192,856		
Total Production of Finished Products	8,901,206	10,459,413	11,258,165	14,472,540	15,567,735	17,038,038		

Source: Department of Mineral Resources.

TABLE XVII - Refined Petroleum Products - Consumption in Saskatchewan from 1950-1957

(Figures in Barrels of 35 Imperial Gals.)

Product	1950	1951	1952	1953	1954	1955	1956	1957 1/
Liquified Petroleum Gas	-	-	-	-	-	110,902	123,610	127,096
Petro-Chemical Feed Stock	-	-	-	-	-	-	-	-
Naptha Specialties	106,794	128,887	44,394	38,876	48,231	35,937	39,113	35,855
Aviation Gasoline	25,966	24,350	56,004	88,335	119,612	115,220	100,988	152,000
Motor Gasoline	4,808,713	5,360,418	6,778,713	7,302,943	6,856,836	6,923,564	7,483,237	8,405,387
Tractor Fuel	409,708	159,515	166,122	135,207	81,820	97,678	56,741	2/
Aviation Turbo Fuel	-	-	2,236	20	131,852	80,728	59,541	56,705
Kerosene & Stove Oil	122,412	607,917	151,555	197,514	214,306	422,415	350,130	265,820
Diesel Fuel Oil	1,074,229	723,312	631,420	716,568	901,392	1,354,376	1,444,516	1,030,747
Light Furnace Oil (No.2)	225,175	466,130	1,307,176	1,732,394	2,001,431)	2,322,632	2,531,887	2,109,797
Other Light Fuel Oil	-	-	44,638	2,871	180,416)			
Heavy Fuel Oil	2,211,549	2,539,562	1,437,208	1,890,524	2,555,021	4,051,523	4,134,452	3,680,360
Asphalt	-	-	-	-	-	456,104	575,573	655,183
Coke	-	-	-	-	-	120,812	123,360	117,612
Lubricating Oil & Grease	-	-	-	-	-	139,119	245,044	228,163
Still Gas	-	-	-	-	-	618,796	739,633	718,580
Unfinished Products	-	-	-	-	-	141,078	9,895	3,100
Other Products	-	-	-	-	-	145	2,344	1,915
Wax and Candles	-	-	-	-	-	180	167	165

Source: Dominion Bureau of Statistics

1/ Figures for 1957, ten months actual, two months average.

2/ Figures for Tractor Fuel amalgamated with kerosene and stove oil in 1957.

Product	1950	1951	1952	1953	1954	1955	1956	1957 [1]
Liquified Petroleum Gas	-	-	6,440	42,127	65,510	102,227	140,259	169,209
Petro-Chemical Feed Stock	-	-	-	-	-	-	-	-
Naptha Specialties	101,998	124,015	[illegible]2,313	35,095	48,924	35,996	39,441	55,952
Aviation Gasoline	-	-	-	-	-	-	-	34,493
Motor Gasoline	4,390,715	5,072,776	6,233,233	7,760,471	7,705,818	7,751,133	7,282,318	7,608,123
Tractor Fuel	327,906	178,493	213,829	263,170	4,425	486,509	669,770	2/
Aviation Turbo Fuel	-	-	455	87,682	270,794	600,116	287,761	245,656
Kerosene & Stove Oil	113,388	759,573	103,089	265,201	259,585	339,276	574,235	1,052,867 2/
Diesel Fuel Oil	1,038,648	786,301	1,419,620	1,915,057	2,405,795	2,770,098	3,403,785	3,730,796
Light Furnace Oil (No.2)	-	-	697,275	675,924	976,294	766,500)	841,698	1,033,747
Other Light Fuel Oil	314,843	477,288	66,820	24,694	55,677	53,798)		
Heavy Fuel Oil	2,400,021	2,761,169	2,161,207	2,983,045	3,150,408	3,794,280	4,305,640	2,229,797
Asphalt	189,440	253,351	276,435	291,588	410,865	466,682	805,947	1,096,650
Coke	13,973	25,971	41,761	112,856	137,904	286,201	249,706	259,080
Lubricating Oil & Grease	2,750	4,542	3,839	1,478	639	542	2,336	-
Still Gas	-	-	-	-	-	614,416	739,633	718,663
Unfinished Products						286,550	498,302	383.946
Other Products	7,524	15,974	2,759	14,153	75,087	132,209	1,247	54,576
Wax and Candles	-	-	-	-	-	-	-	-

Source: Dominion Bureau of Statistics

1/ Figures for 1957, ten months actual, two months average

2/ Figures of Tractor Fuel amalgamated with kerosene and stove oil for 1957

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MR. BROCKELBANK: Are there any questions on any of these tables?

THE CHAIRMAN: I do not think so, Mr. Minister; I think they are very clear

I wonder if it would not be wise for us to take a ten-minute break; would you not like to rest your voice for ten minutes?

MR. BROCKELBANK: Thank you, Mr. Chairman.

THE CHAIRMAN: We will re-assemble, gentlemen, in ten or twelve minutes' time.

---A short recess.

THE CHAIRMAN: If you are ready, Mr. Minister?

MR. BROCKELBANK: 4. Marketing of Saskatchewan Crude by 1965: The disposition of Saskatchewan crude oil by 1965 will depend, among other things, on the marketing possibilities in Saskatchewan itself, Alberta, Ontario, Manitoba, the United States and possibly Montreal.

(a) Estimated Saskatchewan Requirements: Basically the method used to make the estimate of future Saskatchewan requirements has been to project the average increase over the past number of years. The developments in each category of refined products has been taken into account for the eight years 1950 to 1957. This period reflects both good years and bad years in the Saskatchewan economy and it is considered that it provides sufficient data for forecasting future trends.

Of the sixteen items of refined products taken into account, five have shown a definite

increase, namely, motor gasoline, avaiation gasoline, liquified petroleum gas, light fuel oils and asphalts. About five have shown decreasing trends: naptha specialties, kerosene, stove and tractor fuel oils, diesel fuel oil and heavy fuel oils. The use of naptha specialties, kerosene and stove oil has decreased because of the increase in electrification and the use of natural gas. The decrease in heavy fuel oil is attributed to the dieselization of railways, and also to the increasing use of natural gas in industry and power generation. Because of lack of statistics before 1955 for other products such as coke, lubricating oil and greases, still gas, wax, candles, etc. forecasts in these categories have been more difficult. The estimates made for them are therefore somewhat more arbitrary. However, their consumption is very small compared with other products and developments in these fields are not likely to affect the total significantly one way or the other.

The increased production of petroleum coke by 145 tons daily, planned by Consumers Co-operative Refinery Ltd. in Regina, may result in the increasing use of coke in the next few years, but has not been considered when making forecasts.

Consideration has been given to other factors having a direct bearing on the use of refined products in the future years, population growth, an increase in the number of automobiles, an upward trend in construction activity including highways, industrial development and an increase in the standard of living.

The rate of increase in motor vehicles in Saskatchewan in the last eight years had been about 6% per annum. It is expected that this percentage growth will be maintained in the next eight years also. The increase in motor gasoline consumption has, therefore, been calculated at the same rate. No significant change has been considered in the number of tractors to be used on farms in 1965. On the basis of projected motor vehicles and tractors, motor gasoline requirements by 1965 come to 276,130,000 and 85,000,000 gallons, respectively.

(No. of Motor Vehicles by 1965.

1. Passenger cars - 266,974 - consumption per vehicle 500 gal./yr.
2. Commercial vehicles - 171,849 - consumption per vehicle 830 gal./yr.
3. Farm Tractors - 125,000 - consumption per vehicle 680 gal./yr.

Source: Prospects for Economic Growth in Saskatchewan, a submission to the Royal Commission on Canada's Economic Prospects by the Government of Saskatchewan, 1955, p.94.)

The 74,270,000 gallons remaining from the total figure of 435,400,000 gallons (12,440,000 bbls.) of motor gasoline forecast for 1965 will be used by such machines as combines, motors, etc. A similar approach has been applied for other items using refined products such as housing construction and industrial users.

The construction of the South Saskatchewan dam may have some effect on refined petroleum products in more consumption of gasoline and diesel oil in earth moving equipment. But since no means

have been available to study this aspect of future trends, no consideration has been given to it in the above estimates. The tempo of economic development in the Province of Saskatchewan in the next seven years has been assumed to be similar to that prevailing in the last seven years.

No allowance has been made for any possible change in the tax structure, provincial or national, nor for any notable price change in the coming years affecting the future use of refined products.

Based on the above considerations, following is a table showing estimated requirements of refined products by 1965 while the increase in population is estimated at 1.82 per cent per annum by 1965, the overall average rate of increase for the consumption of all the refined petroleum products combined is approximately 3% per annum.

TABLE XVIII - Estimated Requirements of Refined Products by 1965.

(In Barrels of 35 Imp. Gals.)

	1956 (Actual)	1965 (Estimate)
Liquified Petroleum Gas	123,610	147,000
Naptha Specialties	39,113	10,000
Aviation Gasoline	100,988	238,000
Motor Gasoline	7,483,237	12,440,000
Aviation Turbo Fuel	59,541	20,000
Kerosene, Stove Oil & Tractor Fuel	406,871	138,000
Diesel Fuel Oil	1,444,516	1,000,000
Light Fuel Oils	2,531,887	3,798,000
Heavy Fuel Oil	4,134,452	1,913,000
Asphalt	575,573	1,441,000
Coke	123,360	120,000
Lubricating Oil & Greases	215,044	230,000
Still Gas	739,633	750,000
Unfinished Products	9,895	10,000
Other Products	2,344	2,000
Wax and Candles	167	200
Total	17,990,231	22,257,200

On the basis of the above estimates of refined products requirements by 1965, and assuming that refinery capacity will be increased to meet this demand, the crude oil receipts by Saskatchewan refineries will amount to approximately 24,000,000 barrels by 1965. Because of the economics accruing from the Interprovincial Pipe Line, as explained above, most of this demand will likely be met from Alberta crude. Assuming that the increased demand of five million barrels by 1965 will be met by Alberta oil, Saskatchewan's share of this market is likely to remain in the order of five million barrels. Approximately one-half of this would be light, a little less than the other half medium and the rest heavy.

(b) Alberta: As has been previously explained, the Saskatchewan crude oil sales to Alberta have consisted largely of heavy crude from the Lloydminster areas going to refineries just over the border and used largely for bunker fuel. The falling demand for heavy crude, resulting from railway dieselization, may be offset somewhat by the installation of catalytic plants for producing gasoline, but there appears to be little hope for expansion of this Alberta market for Saskatchewan crude.

Sales in Alberta dropped from a high of 1,843,719 barrels in 1955 to 1,387,758 barrels in 1957. This trend may continue, even if at a reduced rate, so that Alberta demand has been estimated at approximately a million barrels by 1965.

(c) Ontario Market: The present capacity of refineries in Ontario is 170,500 ("Composite References", 1957-58, Oil in Canada, p. 378) barrels

a day, and we understand that additional capacity of 60,000 barrels will be constructed during 1958. Total refining capacity in Ontario by the end of 1958 should therefore reach some 230,000 barrels and with further contemplated installations, may reach 250,000 barrels by the end of 1959. The estimated receipts of oil by these refineries in 1957 was 51,445,000 barrels or an average of 141,000 barrels per day (1956 -- 47,313,196 bbls. actual).

The rate of increase in refined products requirements calculated by the Gordon Commission for the whole of Canada is 5% per annum for the decade between 1960 and 1970. In Ontario, however, because of the more rapidly expanding population, economic and industrial activity, and because of the greater use of automobiles in that province, the rate of increase should be somewhat greater than the national average, probably nearer 6% per annum for the next ten years. To meet the enhanced demand of refined products at the above rate, the volume of crude required in Ontario by 1965 could be of the order of 76,000,000 barrels.

The oil now purchased by Ontario refineries comes principally from Western Canada by pipeline but some supplies also come from Venezuela and Trinidad by tankers. As the production of light crudes by Saskatchewan was not substantial until 1956, this province did not play an important role in serving the Ontario market until that time. However, with the development of the southeast Saskatchewan fields in 1955 and 1956 the picture changed rapidly. In 1956 some 4,099,173 barrels of

[illegible]

Saskatchewan light crude found its way to the Ontario market, and this figure increased rapidly in 1957 to reach a total of 14,210,220 barrels, an increase of some 247% over 1956. This represented 27% of the total Ontario market, compared with 9% in 1956.

It is significant that Saskatchewan crude was able to increase its shipments to the Ontario market much more rapidly than the market itself was expanding. It is also significant that in 1957 Saskatchewan was able to market virtually all of its light crudes despite some general distress in the marketing position of Western Canadian crudes.

This suggests that Saskatchewan may be able to continue to market a substantial proportion of its light crude in the Ontario market. Should the same factors prevail in the next eight years, as have existed in the last three years, (involving Saskatchewan supplying all of the increased Ontario demand) Saskatchewan would be supplying more than 50% of the Ontario demand by 1965, that is, approximately 39 million barrels of a total Ontario market of 76,000,000 barrels per year. If Saskatchewan supplies two-thirds of that increase in the market, which is considered the very minimum, Saskatchewan shipments to Ontario would be about 31 million barrels. To sum up, the Ontario market for Saskatchewan crude should range from about 31 to about 39 million barrels by 1965.

(d) Manitoba: Manitoba refineries purchased 3,906,333 (Table XII, p.49) barrels of Saskatchewan crude during 1957. Their consumption of

Saskatchewan crude has been increasing rapidly since 1954. In 1954 they took 1,654 bbls., in 1955 - 11,885 and in 1956 - 558,167.

Since only light gravity crude is used by refineries in Manitoba, their receipt of Saskatchewan crude has been increasing with increasing production of light crude in this province. With the still increasing availability of light crude in Saskatchewan in future years and failing many new discoveries of oil in Manitoba, it is expected that the Saskatchewan share of that market will continue to increase.

The present consumption of crude by Manitoba refineries is 10,425,600 bbls. (1957 est.) ("Composite References", 1957-58, Oil in Canada, p.225) and 38% of this is met by crude from Saskatchewan. By 1965 it is expected that the crude required by Manitoba refineries will increase to about 13,762,000 bbls.

On the basis of the total increased Manitoba demand of some 3.3 million barrels being met by Saskatchewan, the upper limit for the Manitoba market by 1965 would be about seven million barrels. If, however, Saskatchewan supplies only two-thirds of this increased demand, it would amount to approximately six million barrels a year. All of this will be light crude.

(e) Montreal: In recent months the pressure of market limitations on Western Canada has served to focus attention on the possibility of securing access to the market represented by the very large concentration of refinery capacity in the Montreal area. The Levy report, released in January, 1958, discussed the possibility of transporting as much as 250,000 barrels per day to Montreal. The report suggested that several steps would be necessary to make the delivered price of Western Canada crude competitive against present imports received mainly from Venezuela and the Middle East.

We make no comment at this time upon either the overall proposal or the particular suggestions offered, other than that we believe it preferable for oil to move as far as possible to nearby economic markets.

That could be clarified: I think there is an unfortunate construction there. "...for oil to move as far..." -- it means, actually, oil to move as much as possible to nearby economic markets, rather than miles of distance.

If restrictions by the United States upon the import of crude are continued indefinitely or further intensified, however, it may well be that there may be no other outlet for the growing production of Canadian crude than the Montreal market. The problem may be more acute in Alberta than in Saskatchewan but it is clear that any action to open Montreal to western Canadian crude would help materially in solving the marketing problem foreseen for the industry generally during the next few years.

4. The United States Market: Because of the proximity of crude oil fields in Saskatchewan to the north-central United States, the construction of pipeline facilities and the type of crude required by the refineries, the export of Saskatchewan crude to the United States has been increasing rapidly since it began in 1955. Since oil is a commodity that moves freely in world trade, the Saskatchewan Government has welcomed this development and, as has already been stated, believes it desirable for Saskatchewan oil to flow to any market, domestic or export, that can be economically reached.

The opening up of the north-central U.S. market resulted from the construction of a pipeline from the medium crude fields of south-western Saskatchewan to Regina, the utilization of the Interprovincial line across the U.S. border, and suitable spur lines as far south as St. Paul, Minnesota. Subsequently the medium crude reserves of the Weyburn-Midale area were also linked to this transportation facility.

The U.S. refineries served to date by Saskatchewan medium crude include: Great Northern Oil Co. of St. Paul, Minn., International Refineries Inc. of Wrenshall, Minn., and Lake Superior Refining Co. of Superior, Wisc. These refineries, we understand, use medium type crudes almost exclusively. Since Saskatchewan is the largest producer of this type of crude in Western Canada, and since adequate sources of supply from nearby American fields are lacking, Saskatchewan has secured a preferred position in this market.

By 1956, shipments from Saskatchewan to this market had increased to 6,964,000 barrels, and

in 1957 almost doubled, reaching a figure of 11,758,000 barrels. This amounted to about 66 per cent of the total throughput of the refineries to which deliveries were made. Despite some reduction of refinery throughput in 1958, Saskatchewan deliveries have increased over 1957 and are expected to average over 40,000 barrels per day during the first four months, or an approximate annual level of 15,000,000 barrels. Since Saskatchewan deliveries now represent a very high percentage of total present throughput, it is not expected that the rates of increase of the past three years can continue, and may shortly level off at around the current rates.

It has not been possible for us to assess future markets in this area for Saskatchewan crude, but we believe the prospect hinges upon two principal factors: first, the growth in demand for products in these north-central states; and second, the degree to which imports of refined products from other states can be replaced by local production. Taking the first factor only into account, it may be reasonable to apply the annual average four per cent growth figure estimated by Davis for the United States. (Davis, John, Canadian Energy Prospects, Royal Commission on Canada's Economic Prospects, 1957.) This would suggest a market increase of about 5,000,000 barrels over the eight years to 1965, or a total demand of some 20,000,000 barrels of Saskatchewan crude by that year. The acquisition by Saskatchewan of a still higher percentage of refinery purchases, the expansion of refinery capacity geared to use medium gravity crude along the route of the pipeline

facilities, and the substitution of locally refined products, might well support a higher estimate of the total potential market demand by 1965, perhaps of the order of 23,000,000 barrels.

It has been suggested that the foregoing estimates may require downward revision, at least on a temporary basis, as a result of the current policy of the United States Government to restrict imports of foreign crude. It is reported that this policy has already affected Canadian exports to the U.S., but to date it has not required a reduction of Saskatchewan shipments into the north-central states since the initial quota for this area was substantially in excess of current purchases from Canada.

I might point out that there are others here, and certainly when Mr. Sandlin is here tomorrow, he will give you more information in regard to that.

Because of the existence of this margin, together with the impossibility of accurately assessing future changes in policy, the effect of import restrictions has not been reflected in these tentative market projections.

5. Summary Market Prospect: The foregoing analysis has indicated that by 1965 the Saskatchewan production potential for crude petroleum, within normal maximum permissive rate limitations, is estimated at about 106 million barrels annually. As against this, the market prospect by 1965 is estimated at about 63-75 million barrels, as shown below:

Marketing Situation for Saskatchewan Crude Oil, Projected to 1965

(millions of barrels yearly)

Production P tential			106
Market Demands:			
1.	Alberta	1	
2.	Saskatchewan	5	
3.	Manitoba	6-7	
4.	Ontario	31-39	
5.	United States	20-23	
	Total Demand		63-75
Production Potential Excess			43-31

The data indicate, therefore, the likelihood of a large gap of 43-31 million barrels between the estimated production potential of Saskatchewan crude oil in 1965 and the total market demand projected at this time.

By types of crude, the difference between production potential and market potential would be about 20 million barrels for medium gravity and 15 million barrels for light crude. If no additional outlets are found by 1965, actual output will necessarily be curtailed to about 70 per cent of productive capacity.

A Note on By-Products, Propane, Butane, Sulphur, etc.

With continuing oil exploration and development, additional fields of light oil and natural gas are anticipated and these in turn will eventually lead to additional supplies of propane, butane, pentane and sulphur whenever gas stripping plants are required for conservation control.

Most of the pentanes so produced will be used in local refineries or fed into the oil pipelines and transported to the United States or Eastern Canada. Obtaining markets for the other products will require more involved solutions.

Although the use of propane as a fuel has been increasing year by year throughout the province its potential growth has been retarded by lack of local sources of supply. In the past some propane has been produced by refineries in Regina, Moose Jaw and Saskatoon. The amount available from these sources, however, has never been sufficient to supply the demand. As a result propane has been imported from Alberta, Wyoming, Oklahoma and Texas. Because of the long distances involved in bringing additional propane to the province, the price for propane has remained high -- considerably higher than the price in neighbouring provinces or states where supplies have been readily available from nearby gas and oil fields.

During 1958 a large gas-stripping plant will come into production at Steelman and make available large volumes of propane at a reduced price. It is expected that this anticipated price reduction, as well as plentiful supplies, will result in a rapid rise in the consumption of propane, especially in the small communities and in the farm areas. It is expected that on the farms propane will become the preferred fuel, since it can be used to supply all requirements for space heating as well as fuel for tractors and other farm equipment.

The continually expanding production of natural gas and oil throughout western Canada, could eventually lead to large surpluses of propane and butane and necessitate the construction of a special pipeline to carry these products eastward

to the head of the lakes or even into the leading petrochemical production centres of eastern Canada.

Another possibility is that the increased supplies of butane and propane could form the basis for petro-chemical plants in Saskatchewan. This would, of course, depend largely on satisfactory markets being found for the petro-chemicals produced.

Another by-product of gas stripping plants will be sulphur. Marketing of this product in Western Canada will become a serios problem within a few years as more and more natural gas is exported from Alberta. Although Saskatchewan's sulphur supply will never be large by Alberta's standards, this province's sulphur will have a market advantage due to its closer proximity to Eastern markets. The availability of sulphur along with natural gas makes feasible the operation of sulphuric acid and ammonia plants, should either a local or export market for these products be developed.

MR. BROCKELBANK: The Hon. Mr. Brown. Is he here?

MR. BROWN: Right here.

MR. BROCKELBANK: Before I leave here, here are a whole lot of copies of those supplementary comments of mine that I made a while ago.

THE CHAIRMAN: Mr. Minister, thank you very much indeed.

Mr. Brown, was it your intention to deal with the whole of this Part III?

MR. BROWN: Pardon?

THE CHAIRMAN: Was it your intention to be the one who would deal on behalf of the Government, sir, with the whole of Part III of the brief?

MR. BROWN: I believe that was the intention, Mr. Chairman. I think it is rather lengthy and there is quite a bit of it here which is merely historical development of the corporation as a gas utility.

THE CHAIRMAN: That is what I was coming to. I was going to suggest that unless you see some reason why you prefer to handle it in a different way that you read the first page and the top third of the next page and that would bring you down to the development of the Northern System, because we have all read it, and then the development of the SouthernSystem, and then I think we will have to get into the invested capital and then the matter of cash purchase agreements. There is afair amount of it that we can avoid troubling you to read, I think. Suppose we sort of pick it as we go.

MR. BROWN: You just say what you like, sir.

How would that be?

THE CHAIRMAN: Fine, sir. It all goes into the transcript.

MR. BROWN: Fine, sir. Would you like the first part, the early history, down to the development of the Northern System read, sir? Is that right?

THE CHAIRMAN: Would you, please? I think you might read to us page 68 and the top one-third of page 69 of the brief.

MR. BROWN: PART III - NATURAL GAS - DISTRIBUTION AND SUPPLY

A. HISTORY OF THE SASKATCHEWAN POWER CORPORATION AS A GAS UTILITY

1. Early History

Prior to 1950, Natural Gas had been available at a few isolated locations in the province, notably, Kamsack, Unity, Lloydminster and Lone Rock, but reserves had not been considered adequate for further development.

Under the authority of the Crown Corporation Act, the Saskatchewan Power Corporation had been established in 1949 by Order-in-Council to take over many of the functions performed and much of the authority held formerly by the Saskatchewan Power Commission including in a general way the authority to obtain, transmit and distribute electric power and natural gas throughout the province. The Power Commission, along with the Oil and Gas Conservation Board, continues to exercise regulatory authority. The purpose, organization, powers, and responsibilities of the Saskatchewan Power Corporation for the production, purchase, transmission, distribution, sale and supply of natural gas,

as well as electrical energy and other matters, were subsequently set out in The Power Corporation Act of 1950.

In 1950, as a result of a study by an inter-departmental government committee, the Saskatchewan Power Corporation was asked to proceed with the organization of a system for the purchase, transmission, distribution and sale of natural gas in Saskatchewan, providing gas were found in sufficient quantities and the wells were reasonably accessible. Gas was to be purchased either at the well-head or at a central gathering point in any particular gas field. The price was open to negotiation between the Corporation and the producers, providing it was high enough to be an adequate incentive for the development of producing wells. The gas was to be used either for power generation or for distribution to consumers or both, depending on the proximity of the gas field to populated centres. The Corporation was authorized to purchase the natural gas as produced or to pay for it in the ground for future needs. By government policy, the Corporation has the sole right to purchase and transmit natural gas in the Province.

The field of distribution franchises was left open for negotiation between the Corporation and municipal governments. Experience proved the latter to have inadequate borrowing power to assume the added burden of the high capital costs of gas distribution systems. Consequently, excepting those systems in operation before 1951, the Corporation became in effect the sole organization engaged in the distribution of natural gas.

In August, 1951, the initial gas well in the West Central section of the Province was completed. In September, a well thirty miles to the southwest, Husky-Phillips-Brock #1, proved to be a gas well. Both finds were of a very encouraging nature.

In order to encourage the producing companies to delineate the newly discovered fields, the Department of Mineral Resources offered the companies an extension of their drilling permits, and accelerated drilling credits on money spent developing these fields during a specified time.

THE CHAIRMAN: Apparently the Corporation not only has the sole right to purchase and transmit natural gas in the province but it also has the sole distribution in the province, so that all natural gas in the province is handled from the well head to the burner by this Corporation?

MR. BROWN: That is right, sir.

THE CHAIRMAN: Is there any principle laid down as to how you settle the problem of price to the producer and cost to the consumer, because there is no competition.

MR. BROWN: The price to the producer has been by negotiation, and the Corporation has, in effect, set the prices to the consumer.

THE CHAIRMAN: It is negotiated with the producer but there is no other buyer, is that not correct?

MR. BROWN: That is right.

THE CHAIRMAN: So, virtually, he has to take the price that is offered to him if he wants to sell his gas?

MR. BROWN: That is correct.

THE CHAIRMAN: Then is the cost to the consumer based on a rate base from the point of view of investment of the Corporation in a certain percentage?

MR. BROWN: That is right.

THE CHAIRMAN: Would you mind telling us what the percentage of the rate base is?

MR. BROWN: I think it is set up somewhere in the brief.

THE CHAIRMAN: Do we get that further on? Oh, you say so, that the net profit did not exceed 5 per cent of gross..

MR.BROWN: The interest on our borrowed capital plus our surplus works out to 4 1/2 per cent.

THE CHAIRMAN: This is purely as a matter of interest on my part, in knowing how you do it. Do you take the ordinary elements that go into a rate base, such as your working capital?

MR. BROWN: Oh, yes,

THE CHAIRMAN: Income tax and all that sort of thing?

MR. BROWN: No income tax.

THE CHAIRMAN: Because it is the Provincial Government?

MR. BROWN: That is correct. All the factors are considered.

THE CHAIRMAN: And then you aim to get a return on that rate base of what percent?

MR. BROWN: Our actual policy is to distribute at as close to cost as we possibly can. The surplus last year was less than half a million on an

investment of some $40 million.

THE CHAIRMAN: And you pay no dividends?

MR. BROWN: No dividends; no income tax.

THE CHAIRMAN: So, in reality, what you are doing is just taking an increase over cost to pay for your expenses, namely, service of debt, amortization, administrative costs and so on?

MR. BROWN: That is correct.

THE CHAIRMAN: And a little bit more to build up a reserve?

MR. BROWN: That is right.

MR. COMMISSIONER HARDY: Mr.Chairman, is there not one other factor involved in setting the price to the consumer? I believe Mr. Brockelbank mentioned this morning you have made known what price you are willing to pay to the producer as an incentive for them to go out and drill?

MR. BROWN: That is quite true.

M MR. COMMISSIONER HARDY: Do we have a price schedule here anyplace?

MR. BROWN: 10 cents, at the moment.

THE CHAIRMAN: I beg your pardon.

MR. BROWN: 10 cents.

MR. COMMISSIONER HARDY: Is that considered to be a pretty good incentive, right now?

MR. BROWN: It has been. That is well head price.

THE CHAIRMAN: Does it vary with different fields?

MR. BROWN: It is the same in all fields.

MR. COMMISSIONER HARDY: Dry gas or --

MR. BROWN: Dry gas.

MR. COMMISSIONER HOWLAND: What provisions have you got, Mr. Minister, regarding escalator clauses?

MR. BROWN: It is subject to renegotiation every three years.

MR. COMMISSIONER HOWLAND: You have no favoured nations clauses?

MR. BROWN: Oh, yes, we have.

THE CHAIRMAN: Yes, it is in here: A third party clause.

MR. PATTERSON: That third party clause, since it has arisen, puzzled me a bit, because I could not see how you got a third party if people purchased gas in Saskatchewan. Can you amplify that a bit?

MR. BROWN: It is simply looking to the future.

MR. PATTERSON: That is in the event that, in the future,you change this set-up?

MR. BROWN: Yes.

MR. PATTERSON: Am I correct in the assumption that the rate to the consumer is varied by a load factor but is not varied by the distance of transmission; that is, the man who is 100 miles from the well head and the man who is 500 miles from the well head, provided they take the same load factor, will pay the same for the gas?

MR. BROWN: It varies with the size of the community but, essentially, that is correct.

MR. COMMISSIONER HOWLAND: In your pricing to the different communities, Mr. Minister, have you tried to equate the costs to the different communities

or do you make a special study of where the gas comes from and the cost of getting that to the community?

MR. BROWN: I did not quite get your question.

MR. COMMISSIONER HOWLAND: I am sorry. When you are pricing your gas to the different communities, do you try to equate the prices across an area, or do you take the cost of taking gas from a field to a community and working on a cost plus basis?

MR. BROWN: We equate it.

MR. COMMISSIONER HOWLAND: Thank you.

MR. PATTERSON: Another matter, too: on this page 68 you mention that the Corporation was authorized to pay for gas in the ground for future needs. Had that been done at all?

MR. BROWN: Not to this point.

MR. PATTERSON: What would you envisage, if that were to be exercised, as perhaps maximum or minimum amounts that might be used; that is, 1¢, 2¢, 3¢, 4¢, or have you given any thought to that?

MR. BROWN: I don't know whether our studies have progressed to that extent or not. We actually have not arrived at a figure.

MR. PATTERSON: I notice later on you suggest that might be perhaps a useful Dominion-wide policy and I wondered if your studies had gone far enough --

MR. BROWN: We are looking at it much closer now than in the past. It should be desirable in the future.

MR. PATTERSON: For the protection of your own consumers?

MR. BROWN: That is correct.

THE CHAIRMAN: Well, for the protection of

your own consumers?

MR. BROWN: That is correct.

THE CHAIRMAN: Well, for the protection of your own consumers and as an inducement, also, to exploration?

MR. BROWN: Yes.

THE CHAIRMAN: And presumably if another buyer of gas came along in Saskatchewan he would have to go to an export control to take the gas out of the province?

MR. BROWN: Yes.

THE CHAIRMAN: So he cannot distribute and he cannot get it out without a permit, isn't that it?

MR. BROWN: That's it.

THE CHAIRMAN: In other words, it is locked in?

MR. BROWN: Fairly well.

MR. COMMISSIONER HARDY: I just wanted to ask this: We were told in Calgary that Trans-Canada Pipe Line was having a little difficulty buying gas at 10¢ in Alberta and the general suggestion that was made to us, and with a certain amount of emphasis, was that 10¢ was not enough to ensure that there was adequate development work.

Now, on your policy here I take it you figure you are getting your development work on an adequate basis to look after what you consider are your needs at that price?

MR. BROWN: Well, we have been able to do so up to the present. Mind you, we do have an escalation clause in the contract with the Steelman Gas Company; we have contracted to buy the output of dry gas from that

plant when it goes into operation.

MR. COMMISSIONER HARDY: But you are going on the basis that your needs for gas are within this province. At the moment, you are not interested in selling gas elsewhere?

MR. BROWN: Well, we are actually importing gas.

THE CHAIRMAN: I think what Dr. Hardy is getting at is that if the price at the well head were higher as a result of competition your exploration might produce gas which would enable you to cease to be an importer and even become an exporter; but that is a matter of Provincial Government policy which, undoubtedly, has been carefully considered. You understand me?

MR. COMMISSIONER HARDY: That is correct, Mr. Chairman.

Do you contract for interruptible industrial load?

MR. BROWN: Yes.

MR. COMMISSIONER HARDY: You figure it is good business as far as your gas supply is concerned?

MR. BROWN: We think so.

THE CHAIRMAN: I notice the brief does say you do use gas as a fuel for power plants.

MR. BROWN: Yes.

THE CHAIRMAN: I wondered, as I read it, just how much study had been given to the utilization of the gas resources within the province in the light of there being, as the brief shows, really, a deficiency in that energy resource, and yet it is a premium fuel, so to speak, which is being utilized for the

production of electricity. There must be some reason for that that is not self-apparent, because of Saskatchewan's coal resources, for instance.

MR. BROWN: Well, I think the brief will indicate that we do not strongly favour to use that gas for power production. It has been used to some extent, for the present, simply for the purpose of building up the load in the initial stages of the gas system and it has been used in some power plants where it is economically feasible to do so. We are not using it, for example, in the plant at Estevan, where we have our big station right in the coal fields.

THE CHAIRMAN: That sits right on the lignite field?

MR. BROWN: Right on the lignite field.

THE CHAIRMAN: It just comes down, doesn't it, to a matter of the best utilization in the judgment of those concerned with the administration of it?

MR. BROWN: That is true.

MR. COMMISSIONER HARDY: I still am a little alarmed at some of the implications of the policy. You would not be prepared, Mr. Brown, to sell to Trans-Canada, for example, at a mark-up on this 10¢, I take it, or have you ever had occasion to consider it?

MR. BROWN: Not at the present time.

MR. COMMISSIONER HARDY: But that is the procedure you would follow at the present time if you did have a surplus of gas; you would figure on selling it at a mark-up to Trans-Canada?

MR. BROWN: I would not want to say that was

firm government policy at the present time. That is something that would have to be considered if we were faced with that situation.

MR. COMMISSIONER HARDY: There is a plant in Alberta that is sitting right on top of coal, too, and at the present time they are burning 10¢ gas, but it would not be economical at 11¢ gas, as I understand that; and, as we were given the picture in Alberta, the 10¢ price is low and is very close to simply being right on the borderline between gas and the cost of the coal.

MR.BROWN: Well, that is a similar situation to what we have in Estevan. Lignite is still cheaper, actually, as a fuel, than even gas at 10¢.

MR. COMMISSIONER HARDY: Is it not an uneconomic use, then, of a premium energy resource to be using your gas for the generation of power, under those circumstances?

MR. BROWN: As I mentioned a moment ago, we do not favour the general use of natural gas for the production of power. I think there are times when it might become necessary to use some of your available supply but, in the long run, we do not favour that sort of situation at all.

2. <u>Development of the Northern System</u>

Early in 1952, a firm of consulting engineers were engaged by the Saskatchewan Power Corporation to lay out transmission and distribution facilities for Saskatoon and certain other points. Their report was to include a detailed engineering report, specification and contract documents.

In the meantime, the producers had been

working on field developments, and had 9 tested wells in two fields by February, 1952. The reserves proved for these wells were judged adequate to construct a local system to serve the town of Kindersley (population about 2500) and the village of Brock (population about 200). It was felt that such a system would be valuable training and testing project.

The 1952 drilling proved sufficient reserves to justify a distribution system in Saskatoon and smaller centres en route and this was built in 1953. The Brock reserves supplemented by the larger Coleville Field in 1954, were utilized to supply the Saskatoon system. Approximately 130 miles of 10" transmission line were involved.

The negotiations with the City of Saskatoon in 1952 established the pattern which has been followed throughout the Province since that time. Briefly, the city was offered the option of installing the distribution system itself, purchasing gas from the Power Corporation and reselling it at rates set so that their net profit did not exceed 5% of the gross revenue, or, in the event the Corporation undertook the project, the City was to be granted a graduated compensation in lieu of taxes, ranging from 1% of gross revenue in the first year of operation to 5% in the fifth year and thereafter. The city chose to have the Corporation operate the system.

By 1955, gas reserves were such that an extension to Prince Albert was undertaken. To meet prospective loads, it was decided to "loop" the existing 10" line with a 14" line utilizing a somewhat

different route from Coleville to Saskatoon in order to supply additional communities. In selecting the Prince Albert pipeline size and route, the industrial potential of the area was taken into account and in 1955 a total of 200 miles of high pressure transmission line was constructed.

During 1956, roughly one hundred miles of laterals to the main northern system were constructed. These served the city of North Battleford, and towns of Battleford, Eston, Humboldt, and several smaller centres close to the pipelines. A 30-mile, 10" transmission line connected the Hoosier field to the Coleville system. In 1957, laterals totalling 35 miles were extended to the towns of Kerrobert and Wilkie.

The 1958 program is expected to consolidate the Northern System extending service to all communities of any size lying close to the route of the pipelines.

Plans under consideration for the near future include extensions to the Melfort-Tisdale-Nipawin region and to Watrous and Wynyard.

3. Development of Southern System

Following the formation of the Trans-Canada Pipe Lines Limited, negotiations commenced between the Saskatchewan Power Corporation and Trans-Canada Pipe Lines Limited regarding purchases and rates. The rate structures presented at that time were considered unacceptable to the S.P.C. because of the high cost and certain minimum bill provisions too stringent for the market conditions of the S.P.C. system. Negotiations failed to produce a satisfactory

agreement as to price.

In 1954, the Success Field was discovered and several wells of promising deliverability were completed. The Corporation examined the prospect of improving their load factor and consequently decreasing the cost of gas from Trans-Canada Pipe Lines or other sources by using this field for peak shaving purposes and for storage.

Since it was felt that Trans-Canada rates did not accurately reflect the cost of transmission to Saskatchewan markets, the Corporation investigated using gas from the Hatton-Many Islands-Medicine Hat area, and found that in spite of high collection costs it appeared to be economically sound to consider the transmission of gas by facilities entirely owned and operated by the S.P.C. even though they would parallel the T.C.P. Line.

As a result, the Corporation took up options already negotiated to purchase gas from the Hatton-Many Islands producers.

The Hatton-Many Islands-Medicine Hat field has reserves currently estimated at some 1,300 billion cubic feet. Of this amount about 600 billion cubic feet are in the area dedicated to the S.P.C.'s market. During 1957, the Power Corporation obtained an export permit from the Alberta Government which allows the Corporation to take a total of 223 billion cubic feet over a 20-year period. In addition some 235 billion cubic feet of the reserves are in Saskatchewan.

In 1955, the Power Corporation built a 19-mile transmission line between Swift Current and the Success field to serve the Swift Current power plant.

In the next year the Corporation constructed the 160-mile transmission line from the Success area to Moose Jaw, and installed distribution systems in Moose Jaw, Swift Current, and Gull Lake. More recently, the Cantuar field which is about 6 miles from the Success field has been developed. The combination of these two fields allowed the S.P.C. to supply the entire Swift Current and Moose Jaw requirements during 1956 and 1957 and into the first half of 1958. Prospects of storage in one or another of the fields in this area remain good.

The major undertaking in 1957 was the construction of a distributing system for the City of Regina. A 20-year contract was entered into with Trans-Canada Pipe Lines Limited for 10 MMCF per day which was estimated to be about 10% of the fully developed requirement of the Southern System. The primary purpose of this contract was to provide some capacity for emergency use and for smaller centres east of Regina adjacent to the T.C.P. line. For the first year T.C.P.L. Ltd. agreed to augment their 10 MMCF per day contract to 20 MMCF per day. In this way, Regina loads for the winter of 1957-58 were supplied from Trans Canada and the P wer Corporation were able to defer construction of the Moose Jaw-Regina section of their line for a year.

The development of the Steelman-Alida oil fields led to wasting of flare gas associated with the oil production and on January 10, 1957 the Department of Mineral Resources announced restrictions on this flaring of gas to take effect September 30, 1958. Following submissions to the Oil and Gas

Conservation Board, a permit was issued to the Steelman Gas Company on August 13, 1957, to process the flare gas, with the proviso that a suitable agreement be reached with the Saskatchewan Power Corporation for the distribution of residue gas to Saskatchewan markets. This contract was successfully completed on January 30, 1958.

In 1958, the S.P.C. will construct a transmission line from Steelman to Regina to utilize the output of the Steelman plant (25 million cubic feet per day, initally) in Regina, Weyburn, and Estevan.

B. CHARACTERISTICS OF THE PRESENT SYSTEM.

1. Gas Supply: (a) Brock Field. This field supplied the entire Northern section during the 1953-54 season. The original reserves in place were approximately 20 billion cubic feet with an excellent rate of delivery. The delivery rate has declined somewhat due to the encroachment of water but the field has been producing substantially enough gas to serve the local markets in the Kindersley area. Present reserves are estimated at 15.3 billion cubic feet.

(b) Coleville-Hoosier Fields. These two fields are in the same producing zone and are separated by a dip containing sizeable oil reserves. Production of this gas-cap gas was permitted by the Oil and Gas Conservation Board since the reservoir characteristics make the gas migrate so slowly that no deleterious effect is expected on the oil production. The present recoverable gas reserves in these fields are estimated as follows:

Coleville-Smiley-Viking	152.9 billion cubic feet
Hoosier-Viking	117.7 billion cubic feet
Total	270.6 billion cubic feet

The wells in this area have proved satisfactory so far as deliverability is concerned, but it is anticipated that the volume will prove inadequate and that the supply will have to be augmented by gas from the south or elsewhere within the next two years.

(c) Success-East Cantuar Fields. The Corporation's system in the south was operated for

two years from the Success and East Cantuar Sand fields. The Success field, originally estimated to have reserves in excess of 10 billion cubic feet, proved to have major production difficulties and greatly reduced recoverable reserves. The East Cantuar Sand fields have proved considerably more promising. The wells, which are unhampered by the small amount of oil production of the field, are excellent producers. The recoverable reserves are estimated as follows:

Cantuar-North Success	6.1 billion cubic feet
East Cantuar	50.1 billion cubic feet
Total	56.2 billion cubic feet

(d) Trans-Canada Pipe Lines Limited: The contract between Trans-Canada Pipe Lines Limited and the Power Corporation allows the Corporation to purchase up to 20 million cubic feet per day until 1958 at which time it reverts to an amount of 10 million cubic feet per day at a 75 per cent minimum load factor.

2. Invested Capital: The Saskatchewan Power Corporation gas system construction has been carried out during the inflationary years of the 1950's. The capital outlay per customer served is high when compared with older systems which had the good fortune to get their construction programs under way some 20 or 30 years ago. This contrast becomes even more marked as parts of the older systems are fully depreciated.

Certain U.S. statistics (The Handy-Whitman Index) reveal the following indices of cost:

	1911	1945	1955
Meter Prices	100	157	331
Meter Installations	100	332	598
Total Service Installations	100	334	719

It appears that the capital cost per customer of the installations built within the last few years is probably at least twice that of the equivalent systems built prior to World War II. Since 1955, a further upward revision of prices has occurred in transmission construction materials. To quote an example, the cost of 10" and 12" pipe is now 20 per cent higher than in 1956.

By December 31, 1957, capital investment in the Corporation's natural gas system amounted to $37,500,000. The capital cost per customer (33,000 meters in service) was approximately $1,100. The total capital cost can be broken down into transmission, distribution and general plant investment.

(a) Transmission Capital as at December 31, 1957, was $19,500,000. Ninety per cent of this capital investment went into main transmission lines. The remaining 10 per cent was a result of investments in subsidiary equipment, gathering system lines, land and land rights. The ratio of transmission capital to total capital is high at the present time because of the fact that the gas system is in an initial stage of development with a resulting low saturation of customers.

(b) Investment in distribution at December 31, 1957, was $16,500,000. Of this amount, mains made up 42.5 per cent; customer service lines, 30

per cent; and gas meters, 12.5 per cent. The remaining 15 per cent was for investment of a miscellaneous nature.

(c) Investment in General Plant was $1,500,000 at the end of 1957, made up of various construction and administrative items which cannot properly be allocated to either transmission or distribution.

3. Cash Purchase Agreements: With the exception of the Trans-Canada and flare gas contracts, all the Corporation's gas purchase contracts are for a 20-year period and provided for the payment of 9 cents per MCF until October 15, 1957. At that date the price was raised to 10 cents per MCF. Provision is made for a renogotiation of prices after three additional years.

These contracts generally contain "favoured nation" clauses and "third person favoured nation" classes. The "favoured nation" clause provides that the S.P.C. offer all producers a price matching that of any other producer selling to S.P.C. similar quality gas produced under similar conditions. A "third person favoured nation" clause would call for the Corporation to match the price of any other purchaser of similar type gas in Saskatchewan.

4. Importance of Stable Prices: Investment in the Provincial gas utility is already $37,500,000 as has been indicated, and within the period under review is expected to reach a total of some $170,000,000. The justification for this investment, which represents a mean of some $800 per customer is based first on the present competitive position of gas with respect to oil and alternative fuels, and second upon being able to maintain this competitive position throughout the life of the assets involved. Should this position be reversed at any time as a result of the price of gas rising to such a point that oil was significantly less expensive than gas for domestic heating, commercial and industrial use, or if coal became significantly cheaper than gas in the larger industries, the economical operation of the system would be radically upset. Consumption would decrease and major losses would be experienced, since it would not be possible to increase the price to the public without facing further curtailment in demand and further losses. Contrary to the general assumption that it is possible to pass on to the public increases in the price of gas, there is a very definite ceiling to the retail price at which the system can continue to operate. Once this is approached the total investment is imperilled as is the market for the gas industry itself.

It is extremely important to the Corporation that the wellhead price for gas remain stable, with escalation limited to what can be made available from increasing economies of operation in the expanding system.

For example, in its contract for the purchase of residue gas from the Steelman Gas Company, the Corporation has agreed to an escalation of 1/4 of a cent per annum over the twenty-year life of the contract. This represents an increase in price to 15¢ at the end of twenty years, and represents an assumption that it will be possible to reduce costs by 5¢ over the corresponding period in spite of generally rising costs of materials, of labour, and of interest rates. This can only be achieved by increased consumption and more effective loading of the Corporation's facilities. Any attempt to increase prices to the public to secure this margin would result in decreased consumption.

THE CHAIRMAN: Does that mean that in view of your contract with the Steelman Gas Company that your price to all producers in the Province will go up a quarter of a cent so that it will all become 15¢ under the favoured nation clause?

MR. BROWN: No. This is a different situation entirely. This is price for casing head or flare gas in the Steelman field; a separate agreement with the contracts which we have for dry gas at the wellhead. The favoured nations provisions are not that broad.

THE CHAIRMAN: In other words, your favoured nation provisions for contract are not applicable to such a purchase as that envisaged with the Steelman Gas Company?

MR. BROWN: Right.

MR. PATTERSON: This is not a wellhead purchase -- the Steelman Gas Company one?

MR. BROWN: No, on residue gas.

MR. PATTERSON: Residue gas from the plant?

MR. BROWN: Right.

THE CHAIRMAN: I am not quite sure; you say, ". . . within the period under review is expected to reach a total of some $170 million": how much in the future are you forecasting?

MR. BROWN: A 30-year period.

MR. COMMISSIONER HOWLAND: If you have these favoured nation clauses, how can you have stable prices? I can understand a contract allowing for prices to go up as your plant is amortized, but if you have a favoured nation clause in there, so that, let us assume, next year you pay 11¢ to everybody, and 2 years later you pay 12¢ so everybody gets 12¢, how can you have stable prices such as you talk about here and a favoured nation clause arrangement?

The Chairman tells me this will not apply because you are the only purchaser. Is this the answer?

MR. BROWN: That would be correct, of course.

MR. COMMISSIONER HOWLAND: Well, it is a very simple answer. That is the best position to be in.

MR. BROWN: Right.

5. Service Coverage: It is the general policy of the S.P.C. to serve all centers with a population of at least 1,000 persons. Two towns of over 1,000 population, Meadow Lake and Hudson Bay, are possible exceptions because of their locations. Smaller centers are served if they are within

economic reach of a transmission line. In small centers, where very high saturation rates have been experienced, one of the provisions is that a large building must have a dual fuel heating unit so that in the event of an unforeseen interruption in the gas service, gas subscribers will nevertheless have access to a heated building during the emergency.

The S.P.C. gas system now serves thirty-seven communities with a total population of 265,000. Six provincial cities, Regina, Saskatoon, Moose Jaw, Prince Albert, Swift Current, and North Battleford are already being served with natural gas. Of the remainder, Weyburn and Estevan will receive gas service in 1958, and Yorkton will probably be connected the following year.

By the end of 1957, there were 70,500 dwelling units within reach of the natural gas distribution system. Of this potential market, 33,000 are now consumers. This indicates a saturation of 45 per cent of the area served. Taking all provincial urban centers, both connected and unconnected, gas customers amount to 25 per cent of total urban dwellings. The saturation within each community varies in individual centers (it is high in small communities) but approximates the following pattern:

1st year after gas is made available	12.5 per cent
2nd year " " " " "	30.0 " "
3rd year " " " " "	42.5 " "
4th year " " " " "	52.5 " "
5th year " " " " "	60.0 " "

This is a composite rate of customer

saturation and takes into account existing dwellings and new construction. New dwellings take gas service on virtually a 100 per cent basis due to its convenience and relative cheapness.

Customers are classified into groups of "residential", "commercial", and "industrial". Nine out of ten customers are residential, with the remainder being commercial and industrial.

6. Consumption Patterns: (a) Residential.

The principal residential uses of natural gas are for house heating, water heating, and cooking. In addition, a limited use of gas is made in dryers and incinerators. Gas used in air conditioning and refrigeration may increase in the future.

A recent survey of Saskatchewan Power Corporation's natural gas customers showed that the average number of gas appliances per residential customer was 2.2; customers in the large urban centers tended to exceed this mean, while those in the smaller centers fell somewhat below it.

Due to the preponderance of house heating load over all other types of residential load (85% of total consumption), the seasonal factor has the greatest influence on the residential consumption pattern. An analysis of 1957 annual gas sales to residential customers, amounting to 180 MCF per customer in larger centers and 150 MCF in smaller centers, reveals that 80 per cent of annual consumption occurs in the winter months from October to March.

(b) Commercial: The main classification of commercial customers are: apartments, commercial

buildings and larger businesses; and small shops and other businesses. There is some variation in average annual consumption per customer by size of community. In cities, the average annual consumption is 750 MCF; in greater towns, 600 MCF; and in smaller centers, 375 MCF.

With the exception of restaurants, commercial establishments use gas mainly for space heating, as is the case in domestic consumption. Gas for space heating per average consumer forms 70 - 80 per cent of the total annual gas consumption. Restaurants account for 10 - 15 per cent of the total annual volume. Summer use of gas for air conditioning or refrigeration in commercial establishments is negligible. The undesirable feature of the domestic consumption load factor, namely the wide difference between average annual load and peak load, thus applies to most kinds of commercial customers.

(c) Industrial: Generally speaking, industrial consumers are of two types: processing plants, and institutions with a sufficiently high gas consumption to qualify under the industrial rate schedule.

Institutions tend to have the same consumption pattern as domestic and commercial users. Since processing plants consume steadily the year round and often in excess of eight hours, they have a satisfactory load factor. Furthermore, since some industrial users can be hooked up to dual fuel units and use gas on an interruptible basis during periods of peak domestic and commercial load, they help to even out the differences between average and peak load.

This contributes to economic operation of the gas system, and industrial users of this type are given preferential rates. The Saskatchewan Power Corporation makes provision in contracts for this type of load.

Industrial consumers are grouped in four classes by magnitude of annual consumption. Class I averages below 10,000 MCF; Class II average 50,000 MCF; and Class III users, 200,000 MCF. Examples of these three classes of smaller industrial consumers are laundries, dry cleaning plants, creameries, packing plants, and institutions such as hospitals, schools, and hotels.

Class IV, the large industrial users exceeding these levels of consumption, are few at the present time (Saskatchewan Cement Corporation, Saskatchewan Minerals, Chaplin). Further servicing of this type of load is expected to increase in the near future. Included in this class are steam power plants of the Saskatchewan Power Corporation and other provincial utilities.

Since gas is an exhaustible resource, available only for a limited period, the Saskatchewan Power Corporation's general policy is to save the gas for domestic and commercial consumption. Because of the availability of coal, it is felt that gas should not be ordinarily used in power plants for conversion to electrical energy. However, its use on an interruptible service basis in power plants is justified at the present time under the following conditions:

(i) During the initial period of load develop-

ment, in order to offset high capital cost.

(ii) In off-peak times, to reduce the difference between peak load and average load. Since the Saskatchewan Power Corporation must, in some cases, contract to buy gas at the peak load level all through the year, summertime use in power plants is an important consideration.

(iii) In areas where a power plant is remote from other fuel sources relative to the availability of gas.

Interruptible loads are of great economic significance in a gas distributing system. Without these loads, the availability of gas to domestic consumers might be restricted for cost reasons. After the initial load build-up period of about five years, the power plant load is still important for summertime use. Since it is possible to transfer the power load to other fuels at short notice, the power plant load makes more economic distribution possible by absorbing spare pipeline capacity.

Annual consumption of gas in the Saskatchewan Power Corporation power plants in 1957 was 3,075 MMCF. The price paid for excess gas used in steam power plants is the cost of a fuel alternative and, depending on plant location, the rate varies from 28.5 cents to 31.5 cents per MCF. New contracts provide for the sale of gas to the National Light and Power Company in Moose Jaw which began drawing gas late in 1957 and to the City of Regina Power Plant, which is not consuming yet. The rate charged both plants is 27 cents per MCF.

THE CHAIRMAN: I was puzzled about the power plant, because on page 78 you say, "Since gas is an exhaustible resource, available only for a limited period, the Saskatchewan Power Corporation's general policy is to save the gas for domestic and commercial consumption." That is why I wondered why in this Province, where you do have large quantities of other fuel, such as coal, to operate a thermal plant, for instance, you will allow the use of natural gas when you are deficient for your overall requirements in the Province in that particular source of energy.

MR. BROWN: As I mentioned a moment ago, we do not hold with the long-range view of using natural gas for power production, but in the early stages of the development of a system we think it may be desirable, and I think our situation here in Saskatchewan also has a bearing on it where our demand is so heavy in the winter months and drops off so drastically in the summer months. With some semblance of order in our load factor, it may be desirable.

THE CHAIRMAN: You are speaking now of the use of the gas?

MR. BROWN: Yes, to utilize some gas for power production in the summer months.

THE CHAIRMAN: You would not use the coal in the winter and gas in the summer for the power plants?

MR. BROWN: Well, we are not using it in the power plants where we use the major part of our coal.

7. Conservation: Conservation of a resource under provincial jurisdiction should be such as to secure the most advantageous use of the resource for the benefit of the people of that province. The development of the resource to meet this use must also be such as to provide a reasonable return to those owning or producing the reserves and the reasonable return must, in practice, be of such magnitude as to offer an adequate inducement to owners and producers to develop reserves at a rate suitable to the needs of the province concerned.

With reserves limited, it is axiomatic that they must be conserved for the most valuable uses in the community and not dissipated on less important uses where alternative fuels are easily and economically available. Priorities for the use of gas must be determined by the attributes and qualities which distinguish it from other fuels. The most outstanding characteristic of natural gas is that, in this form, energy can be transported in large quantities more economically than in virtually any other form, including electric power, and that it can be delivered in small amounts to individual users with great economy and simplicity. It would thus appear that domestic use and small commercial uses should be given first priority.

The use of natural gas as an industrial fuel should, generally speaking, be given a low priority. For almost all purposes it is possible to substitute oil for installations of moderate size and coal for larger installations. The use of gas as an industrial fuel ought therefore to depend in the

main on its availability compared with other fuels. However, an overriding consideration is that in the early stages of the development of a natural gas system, the system itself is unlikely to be economic if it is restricted to supplying domestic consumers, since the low domestic load factor in the first few years must, in practice, be compensated for by a higher industrial load factor.

There are also certain chemical uses of natural gas as a raw material for which it is uniquely suitable and such uses should also be given a high priority. But it is important to note that in the past natural gas has been very extravagantly and unnecessarily used as a raw material for industrial processes.

MR. PATTERSON: Mr. Brown, just at that point, the unnecessary and extravagant use: is that having reference to the use for manufacture of carbon black in the United States?

MR. BROWN: That is right.

MR. PATTERSON: That type of situation, though, has not arisen in Canada, has it?

MR. BROWN: I am not too sure.

MR. BROCKELBANK: We have had one or two applications for it, but none of them have gone forward.

MR. PATTERSON: None have gone forward in Saskatchewan?

MR. BROCKELBANK: No.

MR. BROWN: A policy of conservation implies automatically that the gas will be reserved either for use in a single province where its uses

can be controlled or exported only to areas where a similar conservation policy is adopted. Thus the validity of export provincially or nationally from a conservation viewpoint is determined not only by the price but also by the end use to which the gas is to be put. For example, it would be absurd to deprive power plants in Saskatchewan of the use of natural gas in order to export it to the United States if the gas is to be used there for power plant or other less important uses, or if its use there allows the diversion of an equivalent volume of gas to such uses at some other point. This would mean that only when conservation control of the end use of gas in the United States was established, equivalent in objectives and in effectiveness to any conservation established for Canada, should gas be exported from this country to the United States. Similar considerations should apply between the provinces of Canada insofar as the resources are limited.

For example, 50 per cent of the total future power generation in Saskatchewan during the next 30 years could be easily and economically produced from natural gas if no conservation policies were followed. On the basis of present coal prices this could be valued at some 28 cents per MCF. Even allowing for transmission costs, it is obviously absurd to contemplate the sale of natural gas to the United States for some 22 cents per MCF until the Canadian market at this price has been satisfied. Particularly would this be so when it is realized that this gas, or the gas it replaces, may be put to less important uses in an economy in

competition with our own.

In examining the feasibility of Canadian exports of natural gas to the United States regard must also be had for the proven per capita reserves in each country, the number of customers per 100 persons in each country and the present consumption per capita in each country. These comparisons are made in the following table:

Table 20

Proven Natural Gas Reserves Per Capita

U.S. (1956)	1,384 MCF
Canada (1957)	1,239 MCF

Development Status - 1956
(customers per 100 persons)

U.S.	14.7
Canada	3.1

Consumption per Capita - 1956

U.S.	40.6 MCF
Canada	3.1 MCF

Sources: 1. Canadian reserves from submission of Canadian Petroleum Association to Royal Commission on Energy, February 7th, 1958.

2. U.S. Reserves, Development Status and Consumption from Gas Facts, Statistical Record of the Gas Utility Industry, American Gas Association, Bureau of Statistics, pp.2 and 5.

3. Canadian Development Status and Consumption from same source, p. 241.

As is indicated, proven reserves per capita are considerably greater in the United States than in Canada; almost five times as many customers are served in proportion to population and consumption per capita is more than 13 times as great.

In view of the relative positions of the two countries with respect to the supply and consumption of natural gas, as indicated above, it would appear that one of the ways of removing any disparity in living standards between Canada and the United States is to make every effort to bring the advantages of natural gas to more Canadians. The number of natural gas users in Canada should be increased and Canadian consumption per capita should be expanded.

Indeed this trend is already apparent. It is our understanding that the growth in the demand for natural gas in Canada has been much greater than anything anticipated even a few years ago. This, in fact, has been the experience in Saskatchewan. It may well be that in future years the demand in Canada may far exceed anything now contemplated. In any event it is obvious that the domestic development of the natural gas industry has a long way to go in Canada before the high standards of the United States are reached, and a strong case can be made for conserving Canadian supplies of natural gas for that purpose.

At the same time potential producers must be given an incentive to continue the search for additional supplies of natural gas. To this end it would appear to be in the national interest that, to the extent that there is no immediate and adequate Canadian market for supplies of natural gas which may be discovered, and in view of the exceptional circumstances and the unique characteristics of natural gas, the Canadian government might well consider adopting a policy of purchasing supplies of gas in the ground, which could be reserved for use in years to come. This would provide a means whereby preference could be given to the future needs of the Canadian people while at the same time providing producers with a sufficient inducement to maintain their quest for further supplies.

THE CHAIRMAN: Perhaps we could ask one or two questions on that: have you ever calculated what the investment might be from the point of view of purchasing reserves in the ground? That was

suggested to us by the Canadian Northwestern Utilities when they were challenged as to why they did not purchase the reserves in the ground and hold them until the demand for increased quantities of gas would bring higher prices. They say it would cost something like $100 million to purchase a twenty year supply for the City of Calgary. Have you taken that into account for your demand, let us say, in eastern Canada. Surely, that principle would run into hundreds of millions and even billions of dollars?

MR.BROWN: There is no question about it.

THE CHAIRMAN: It would go to the producer in the province for the gas in the ground. Do you really think that is a practical solution?

MR. BROCKELBANK: It might be pointed out, if the producer had a market and could produce this gas, this quantity of gas would only go to market in a period of 10, 20 or 30 years and he would be getting paid over that period of time, so that consideration might be given to buying the gas on a basis as if he were producing it and getting it to market.

THE CHAIRMAN: Are we not here struggling with two or three things that are contradictory to one another: thinking in terms of giving the producer a good price for his gas and the incentive to explore, to bring others in to explore for a source of energy which is in short supply within the Province. At the other end of the stick, keeping the price to the consumer as low as possible. By that same token, no one can come in and purchase

other than the government agency, so how do you get the incentive to search for the quantities of natural gas which your estimates over the years indicate you would need to have in the Province to meet the Province's requirements without importation?

MR. BROWN: I would imagine we will have to face the necessity of an increase in price. There is no doubt that will happen.

THE CHAIRMAN: You would not think you would have to face the necessity of opening up the gas fields of the Province for exploration by producers other than -- in other words, lifting the ban imposed by virtue of the Saskatchewan Power Corporation?

MR. BROWN: I am not sure what you had in mind, Mr. Chairman.

THE CHAIRMAN: As I understand it, if I want to search for gas in the Province of Saskatchewan I can never own the gas. I am allowed to come in and search but I cannot produce it.

MR. BROWN: You can produce it.

THE CHAIRMAN: Yes, I can produce it but I have one buyer only and there is no competition for my gas.

MR. BROCKELBANK: I would not say that is exactly right: there are prices established in other areas for gas and in many areas one of the problems has been that an explorer who discovered gas did not even have one purchaser; he had no purchaser for his gas and one of the reasons we found it necessary to set up a policy some years ago was to state that the gas would be purchased. I have already mentioned

that today. It was, in fact, guaranteeing a market.

MR. BROWN: It has been a factor that is dealt with.

MR. COMMISSIONER HARDY: Mr. Chairman, could I ask Mr. Brown a question? Mr. Brown, at what load factor do you buy this gas from the producer in cents. Is there any guaranteed load factor?

MR. BROWN: There is no particular load factor.

MR. COMMISSIONER HARDY: Will you guarantee him a certain production?

MR. BROWN: We do have a take-and-pay provision in our contract for the Many Islands field: that is 50 per cent of our southern system requirements and, of course, our contract with Trans Canada was for 75 there. There is nothing of that nature in our contracts with the producers in the field in the western part of the Province.

MR. COMMISSIONER HARDY: Do your appendices have any sample contracts in them? I wonder, Mr. Chairman, if the Department could let us have a sample.

MR. BROWN: We could file samples of these contracts with the Board if that will be of some assistance to you.

THE CHAIRMAN: Yes, it would. Could we have it tomorrow morning?

MR. BROWN: Certainly.

MR. COMMISSIONER HARDY: Have you ever prepared the cost to the producer in terms of equal quantities of BTU heating value; as to what he is

getting for oil as compared to gas.

MR. BROWN: Mr. Ganne advises me in our contract with Coleville-Smiley-Brock producers we do have a take-and-pay provision. That will be indicated in the contract filed with the Commission.

THE CHAIRMAN: Can you give us any idea, just before we adjourn, as to how you would provide in the export of gas for the end use being along the line you might consider it proper to be? As I understand, gas going across the border, and we are talking now of gas going to the United States, because when we speak of exporting gas there is only one way it can go and that is south, and when that gas gets mixed up with other gas in the transmission lines it would take you from now until Kingdom Come to figure out which cubic foot of gas went to one part of the country and which cubic foot of gas went to another part of the country through the pipelines.

MR. BROWN: It is rather difficult: our thinking was some effort certainly could be made to ascertain to what this gas from Canada would be put.

MR. BROCKELBANK: Would not the important factor be the general tendency in the country for the use of the gas reserves?

MR. BROWN: If it was used extensively for power resources, that would be a pretty fair indication.

THE CHAIRMAN: We sell lead, nickel, zinc, aluminum and raw material resources, and we do not inquire as to the end use of those before we allow them to go out of the country. Is there

any difference?

MR. BROWN: Maybe we should.

MR. COMMISSIONER LADNER: Mr. Brown, I have one question in order to elucidate the matter in my own mind relative to the proposal that in order to bring about the inducement of development the government should acquire the gas in the ground so that the producer gets the gas and the government gets the title. He gets his money and the government gets the gas. Is your idea that that should be a joint undertaking of the Federal and Provincial Governments on a somewhat fifty-fifty basis? When you say government, does that mean both governments or Provincial Government or Federal Government?

MR. BROWN: Perhaps we can answer that this way, Mr. Chairman: I think our thoughts were, when we set it out in the brief, that this was something the Federal authorities should have a look at to see if it was feasible and practical. We, ourselves, have been taking a fairly close look at this to see what is involved and what the advantages would be both to ourselves and to the producers. We have not crystalized our thinking on it to any extent at the present time, but that is something we think that certainly be explored.

MR. COMMISSIONER LADNER: You have not worked out the interest costs and various factors; that, perhaps, would be very costly.

MR. BROWN: No, we have not gone that far yet.

THE CHAIRMAN: Gentlemen, it is almost

5.00 o'clock; shall we adjourn?

Mr. Minister; would it suit you if we reassembled at 10.00 o'clock in the morning?

MR. BROWN: That would be very good, Mr. Chairman.

THE CHAIRMAN: This hearing stands adjourned until 10.00 o'clock tomorrow morning.

---Whereupon the hearing adjourned at 5.00 p.m. until 10.00 a.m. on Tuesday, April 15, 1958.

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